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The Challenge of the War

HENRY FRANK

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The Challenge of the War

Can Science Answer the Riddle of the Grave?

By HENRY FRANK

Member of the American Association for the Advancement of Science; Honorary Life Member of the Société Academique D'Histoire Internationale, Paris; Author of "Modern Light on Immortality;" "Psychic Phenomena, Science and Immortality;" etc.

Introduction by

HEREWARD CARRINGTON, Ph.D.

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DEDICATED TO

GUSTAVE LE BON

Whose *Evolution of Matter* and *Evolution of Forces* have been
A Revelation and Inspiration to the Author
in the Pursuit of Truth

Preface

About twenty years ago I delivered a series of lectures on Immortality in New York City. The interest in the lectures was so pronounced that in response to requests I published a small pamphlet entitled "Scientific Demonstration of Immortality" (a misnomer, as on calmer and more serious investigation I discovered).

Some years later, 1909, I published "Modern Light on Immortality" in which I undertook to survey the entire historical origin and development of the conception and to question the attitude of recent science toward the problem.

That compelled me to write a larger and more thorough-going work to include the marvels of psychological and psychic phenomena. In that work I undertook to show how all those wonders could probably be explained by scientific laws recently discovered.

These two books aroused a considerable discussion, especially because of my venturing to attempt an explanation of spiritism by natural law and because of the apparent proof of potential future life which the argument tentatively undertook.

Among the many interesting letters I received was one from Ernst Haeckel, the deservedly distinguished head of the German school of mechanistic Monism, which I herewith present:

PREFACE

"Mr. Henry Frank, Author of 'Modern Light on Immortality,' etc., (N. Y.)

Jena, Oct. 9, 1911.

"Most Respected Sir:—You had the goodness to send me your interesting work on 'Immortality.' As I have been sick for a long time and unfit for any occupation, I have just come sufficiently to myself to study your very learned work, and am able but now to express my thanks.

"In 'Part I' you have with great knowledge of the literature presented the historical development of the problems of Everlasting Life and in 'Part II' you have endeavored to harmonize the modern deductions of Philosophy and the science of Biology with the poetical imagery of the Future Life. With full recognition of your widespread scholarship, and the keenness of your speculations, nevertheless, I do not find that you succeed in your original 'New Solution of the Problem,' or that the reality of a peculiar 'Psychical Immortality' is scientifically demonstrated. As you are familiar with my own views as expressed in my 'Riddle of the Universe' (Chapter XI), I need not further analyze the difference between our conclusions. I am a Naturalist Monist and must regard activity of the soul (and all the phenomena of self-consciousness) as physiological functions of the 'Phronema;' namely the work of the neurons or phronetal cells, which compose the grey rind of our brains. In my 'Anthropogeny' ('Evolution of Man') I have shown how the identical organization and development of the brain, both in Man and in the other

Mammals, are to be explained from the same physiological origin. As you are primarily a Theologian and a Metaphysician, therefore a Dualist (even as our friend, Paul Carus, in spite of his most excellent writings on Monism), it is inevitable that our final deductions should be opposed. When you have given many years to the exhaustive study of Biology, and examined into every treatise of Comparative Morphology and Physiology, you will even on the ground of your observations, very likely arrive at the identical Monistic convictions that I have.

"With very great respect

"Yours faithfully,

"ERNST HAECKEL."

In the present treatise I have undertaken to show that resting even upon Dr. Haeckel's own "exhaustive study of Biology and examination into every treatise of comparative Morphology and Physiology," the deductions which he himself makes negativing not only the probability but the possibility of an after existence cannot be accepted as logically valid or convincing. To this end I have analyzed and undertaken to prove the false conclusions to which both he and Dr. Ostwald and other mechanicians have been led by the interpretation which they place on their own scientific data.

In the second edition of my second work on Immortality (Psychic Phenomena Science and Immortality), I have included my replies to numerous other critics occupying some thirty pages, so I will make no further reference to them in this book. But I have

undertaken in the present volume to show how the stock arguments of scientific mechanism or materialism, do not disprove the possible truth of future existence, and have followed up the discussion by reenforcing the arguments based on recent discoveries, especially in physics and biology which seem to me to establish the logical possibility, not to say probability, of such an existence.

I have laid particular stress on the electron theory of thought which I think overcomes many difficulties involved in the problem. This theory is particularly elucidated in Chapters XXVIII and XXIX. In Chapter XXXI I have examined in detail Lodge's "Raymond" and carefully weighed its alleged evidence of personal continuity after death.

Foreword

(Written before the signing of the Armistice.)

At no time in the world's history, perhaps, has the mind of man been so riveted on the problem of death and its possible issue, as at present.

The greatest and most destructive war in the annals of time is devouring more millions of human beings than, a few centuries ago, existed on the entire planet.

This gigantic holocaust has left its wounds and scars in almost every household of the earth. From the farmost distance of the sometime effete Orient, to the pulsing confines of the Occident, the flames of the vast conflagration have spread and engulfed inconceivable hordes of human beings in their grasp.

In normal times the average death rate runs from 16 to 20 per thousand of the population. But when in the course of only four years 25,000,000 casualties have been registered, with millions more each year to be hurled into the hungry maw of death, it need not surprise us that humankind stand aghast at the edge of the grave and gaze, with startled eyes, into its mysterious gloom, praying that some voice may arise to give consolation and hope to the bereaved and mourning.

Whether humanity will, in consequence, regain a new assurance of the after life, because of this universal tragedy, or whether the gloom and agony will

tend to increase doubt and despair, is the problem that addresses itself to every thinking person.

. There are those who approach the subject, in the face of the universal woe, with awakened emotions that give wings to sorrow and suffer it to soar away to realms of prophetic bliss. Some of those who have returned from the front bring tales of the rejuvenescence of faith, of the deepening desire for an after life, and of a disposition to return to orthodox forms of belief.

Such individuals, as Harry Lauder, for example, whose heart has been very tenderly affected by his own sad experience, come with words of universal assurance upon their lips, and declare that the war has overcast the grave with golden beams of promised joy and beauty.

The thrilling thought, he asseverates, that is now sweeping the trenches, is that death has lost its sting and the grave its victory, because the boys on the battlefield now know that life here is but the doorway to a life to come.

Other writers who have not been at the front and still cling to their prepossessions, such as Ernst Haeckel, the German scientist, look on this increase of death but as a natural phenomenon and calculated to awaken no profounder contemplations of future possibilities, than the sudden casualties that befall earthquakes, or other disasters on land and sea.

Nevertheless, we cannot refrain from realizing that such declarations, whether of faith or doubt, are chiefly the articulation of emotions or predispositions

that lie deeply buried in the breast, and whether or not they truly reflect the verity which inheres in Nature as the Supreme Fact, is the last and stupendous problem that must finally be solved.

For what reckons it, or what ultimate value, that we are told this or that, that one speaks of increased faith and exalted anticipations of a coming paradise, made more vivid by the gloom and horror of war; or whether they proclaim a profounder doubt than ever before, because Nature or God suffers such an incalculable slaughter of human beings, and thus, by implication, demonstrates the cheapness of life and its indifferent abandonment?

After all, these are but emotional expressions or vain contemplations; crude deductions based on vague scientific data or insecure and unfounded imagination.

Confronting the appalling conditions that now affright the world, and halted by the serious misgivings that beset the race, the author has undertaken calmly, and without bias or predilection, to ask, once again, for an utterance of Nature herself, and the revelation of the truth that inheres in her laws.

Believing that this problem can never be solved save as Nature herself shall solve it for us, when we shall acquire such a discernment of her secret as shall be clear and indubitable, he has set before himself the arduous task of analyzing every scientific objection which in the name of Nature has been proclaimed against the possibility of an after life; and having traversed this far-reaching historic research, he finally

attempts to show wherein Nature, evinced in the discoveries and logical deductions of science, presents genuine grounds for hope, at least, whereon Man may build a faith that need not rest on slipping sands.

Introduction

By Hereward Carrington, Ph. D.

The point-of-view assumed by Dr. Henry Frank, in his book, seems to me to be an eminently sound and sensible one; and it is one, moreover, which has seldom been taken in the past by psychical researchers, or by those who write upon this subject. Yet it is one, nevertheless, which has been sorely neglected in the past — I refer to the attempt here made to show the relationship between psychical and supernormal phenomena, and general scientific facts, as accepted today by orthodox science. All scientific advance has been made by the process of dovetailing the *unknown* into the *known,* and showing their points of connection, and their relationship; and unless this connection can be shown at one point, or a series of points, the facts in question remain outside the field of legitimate science, and inexplicable. One of the chief objections to psychic phenomena has always been that they are contrary to the laws of Nature; they are contrary to accepted facts; and until some connection can be shown to exist between these phenomena and the ordinary facts of science, this attitude of scepticism will probably continue to prevail.

How is this deadlock ever to be broken? Doubtless, in the first place, by the accumulation of more facts and facts which are better attested; and in the second place, by showing that these phenomena are not out-

side the laws of Nature and inherently impossible, but, rightly understood, are possibly scientifically explicable, and related in some hitherto unsuspected manner with other well-known phenomena.

Now, this is just what Mr. Frank has endeavored to do, to a certain extent, in the book before us, and this is the sort of effort which is surely in the right direction. This most interesting book is not only of value intrinsically, but because of the bold attitude assumed in relation to the facts discussed within it.

If psychic phenomena exist, they must bear *some* relation to the facts of biology, physics, chemistry, and other sciences. In some way, they must be connected with them; or at least their possible correlations should be investigated. Approaching the problems of psychical research from the standpoint of the official sciences is one of the surest ways of understanding them.

Now, although I cannot agree with *all* Mr. Frank's views, as will be seen later on, yet I none the less believe that the author of this book has contributed one of the most thoughtful and illuminating works so far issued upon this subject. And particularly I would commend his attitude towards Vitalism, which he has enunciated and defended quite fully in Chapter XV and elsewhere throughout this book. While it is true that many facts have, of late, been adduced in favor of the mechanistic interpretation of life, and numerous well-known authors have defended this view, it is none the less true that the distinct tendency of modern biology is towards some form of vitalism; and the work of Bergson, Lodge, Driesch

and others, has given this belief a new and a stronger foothold than it has enjoyed for many years. Professor E. B. Wilson, indeed, the eminent biologist, has lately asserted that:

"....The story of the cell has on the whole seemed to widen rather than to narrow the enormous gap that separates even the lowest forms of life from the inorganic word." (*The Cell,* p. 434.)

This question—of the nature of the life force—is a far more important one, both theoretically and practically, than most researchers are aware of. Whether or not life can exist apart from the body is, of course, the great *crux* of modern science. The mechanistic view is that vitality—life—is associated with the functioning of the nervous system, and indeed is its product, so that all talk of life existing apart from nervous tissue is so much rubbish. If it were definitely proved, however, that such was actually the case—that life *could* exist apart from matter and a material organism, it would give us a tremendous leverage, and a vital point of attack upon the mechanist—just as the phenomena of thought-photography seem to show the possibility of thoughts existing apart from brain activity, as Mr. Frank has said in his book. This question of the nature of the vital energy within us is so important, indeed, that, as I have contended elsewhere: "When the phenomena of psychical research come to be generally accepted, we shall have to recast many of our conceptions and beliefs, and one of the first of these will be our idea of vitality and the life force. Much hinges on this for psychic research, and, if its advo-

cates could but see it, the battle might be practically won on this issue alone." The reason for this is simply that we have in this way a very good chance of proving that life can exist apart from nervous tissue; and if that should ever be demonstrated, then good-bye to the older mechanistic views of life, and its nature and connection with the organism!

In discussing the question of immortality—or rather the natural indestructibility of the cell and of protoplasm, Mr. Frank has quoted the work of Weismann, Loeb, and others; and it is indeed curious to note the attitude assumed by many of these men — the most rigorous and eminent men of science today — with regard to this problem. Many biologists could be found who would declare that there is no known reason why the human organism should ever wear out and die, since it has somehow learned to repair itself. But their arguments have (perhaps naturally enough) never gained wide acceptance in accredited circles, and the bare fact that all men *do die* seemed completely to refute their views. Yet, as Mr. Frank has shown, the death of the body is in a sense as mysterious as its life; and J. Loeb, for instance, in his latest work, *"The Organism as a Whole,"* says:—

"The idea that the body cells are naturally immortal, and die only if exposed to extreme injuries, such as prolonged lack of oxygen or too high a temperature, helps to make one problem more intelligible. . . . It seems indeed uncanny that so delicate a mechanism (as the heart) should function so regulary for so many years. The mysticism connected with this and other phenomena of adaptation would disappear if

we would be certain that all cells are really immortal, and that the fact which demands an explanation is not the continued activity but the cessation of activity in death. Thus we see that the idea of the immortality of the body cell, if it can be generalized may be destined to become one of the main supports for a complete physico-chemical analysis of life phenomena, since it makes the durability of organisms intelligible." (pp. 32-33.)

Thus the whirligig of Time justifies even our veriest dreams!

Mr. Frank is, I believe, quite right in arguing for a certain form of dualism—a belief which is also gaining wider and wider acceptance in the scientific and philosophical worlds. The logical monistic doctrine has such inconsistencies within itself, when analyzed, that one wonders why men ever accepted it as they have done—not as theoretical ultimate belief, but as a practical and immediate working theory. The only reason for their belief, it seems to me, lies in the fact that it has presented the only immediate alternative to admitting some form of dualism, with all that implies—and Orthodox Science would do anything but that! Yet it is quite possible that science will one day, in the near future, prove dualism to be a fact; and then all the metaphysical and philosophical arguments which have been advanced in the past will have to be relegated to the scrap heap, like so many other "world-theories" of the past,—all of which were the accepted and respectable theories of their own day and time.

In Chapter XX, Mr. Frank has argued for the

necessity of conceiving some sort of ether vehicle or intermediary between the mind and the body, enabling the former to act on the latter; and in this he is, I believe, quite right. He has also endeavored to state *in what* this vehicle consists. It is a sort of etheric organism, possibly radio-active in character. So far I might follow Mr. Frank; but when he contends that radio-activity also *IS* the thought and consciousness behind this organism, animating and inhabiting it, I must indicate my dissent. I may have misunderstood Mr. Frank's argument in some important particular, but it seems to me that while the expression or manifestation in the physical or etheric world might be designated as radio-active—that is, its outward manifestation or expression,—the *essence* of the thought is something quite different from that, lying in the psychological world, and not in the physical world at all. All that we know of the physical energies in our universe goes to show that they are *blind;* that they can be directed or manipulated; but are not of themselves conscious or mental in essence. It is the same here. Mental energy might conceivably be brought within the law of the conservation of energy, in some form or another,—as Ostwald and others have lately tried to show, in their doctrine of "Energetics;" but they have one and all neglected to include, in their conception of the facts, the *noumenon,* the inner meaning or essence of the thought. As Dr. MacDougall pointed out and insisted upon so strongly (in his *Body and Mind*) *meaning* is that which distinguishes thought from all else; and he is even inclined to defend the view that meaning, as such, has no cerebral

correlate or equivalent! This being true, it seems to me that meaning, the inner essence of thought and consciousness, can no more be attributed to radio-activity than to any other form of physial energy in this world; since it is no more distinctly psychological than they.[1] With this reservation, however, I may say that I consider Mr. Frank's views and analogies both ingenious and illuminating; and more than that, very probably right,—as recent investigations in the field of psychism have shown.

Mr. Frank has rightly drawn attention to the fact that the newer electric theories of matter have not, as yet, sufficiently modified the other practical sciences—such as medicine—which nevertheless deal with matter, but continue to regard it in the older light of material substance,—on the older atomic view. Dr. Albert Abrams, of San Francisco, has well pointed out, in his *Spondylotherapy* and elsewhere, that the new theories of matter should have profoundly modified the practice of medicine,—since the body can no longer be regarded as a mere bundle of matter, but rather as the expression of electrons, which constitute the atoms and molecules of its structure. An electrical theory of medicine should therefore replace, to a very large extent, the older class physical views; the body should be regarded as an electric, rather than a physical, organism. This being so, a profound change in our views as to treatment should have resulted; but, as a matter of fact, such changes have not as yet been observed in any branch of med-

[1] See my comment, Appendix "A" (Author).

ical literature, save only in a limited circle, and among electrical specialists.

The author of this book is assuredly correct in maintaining that the older philosophical and ethical and moral arguments, aiming to prove immortality are quite incapable of performing that task,—just as the older teleological and orthodox arguments were. As Professor Hyslop has remarked, "Philosophy is useless and helpless for proving a future life." We might thereby raise a *presumption* in its favor; we cannot offer *proof*, and proof is what is wanted. In an argument of this kind, we must appeal to facts and facts alone, and meet the sceptic upon his own ground, and better him with weapons of his own choosing. This is the *ad hominem* argument. We must use it in dealing with this question. Are there or are there not facts which go to prove survival? We do not want inferences; we want demonstration.

This demonstration Mr. Frank has tried to make in the present volume, and he has made the attempt from a rather novel standpoint. Arguing from the duly accredited facts of biology, physics, chemistry, etc., he has sought to show that these very facts,—rightly interpreted, and extended as we have a right to extend them,—prove that "something" in man survives the shock of death—and hence that death does not end all in the sense that the materialist would contend. But what is this "something" which survives? Is it the personality itself—the friend we once knew on earth? or is it some fragment of that personality? or is it a mere persistence of a form of energy, which continues to persist for some time after

the destruction of the body, merely by reason of its own inertia and momentum,—in much the same way that a train continues on its way for some time after its power has been shut off, merely by reason of its impetus and velocity? Well, it seems to me that this is the very question at issue, and which can only be solved by continued experiment and research, carried over a number of years—such experiments as the psychical researchers are now carrying on, and which the spiritualists, theosophists and others are also making in their own way. Again, it will be seen, we have a question of *fact*.

After all, Christianity itself is founded not upon moral or ethical teachings, nor upon the Bible; but upon a psychical phenomenon—a *fact*. In the resurrection of Christ we have this fact—this psychical phenomenon; and St. Paul himself said that: "If Christ be not risen, then is our preaching vain, and your faith is also vain." (I. Corinthians, XV., 14). That is precisely the view of the psychical researcher, and could not express it more exactly. All scientific religion must depend upon evidence, and scientific evidence at that. That is why Mr. F. W. H. Myers called psychical research "The preamble to all religions." That is why Mr. Gladstone, in his oft-quoted remark, spoke of it as "The most important work in the world today—by far the most important."

It is just here, however, that Mr. Frank and I again find ourselves in some form of disagreement. For he says in Chapter XXVII: "I believe that the further investigation and test of this principle in connection with the marvelous claims made by spiritists

and psychics will show that they bear no relation whatever to the world of spirits or anything contrary to the discovered laws of matter, and are amenable to the same planetary laws of existence." And again: "It is incumbent on the medium to prove the identity of the professed personality, which has thus far been quite an impossible achievement." And again: "One may therefore accept the hypothesis of the continuity of thought-forms, and even spirit-personalities, without at the same time being compelled to accept the hypothesis of spirit return or the genuineness of spirit communion. Even though the personality may survive, we have yet no proof that such personality may communicate thoughts to the dwellers in the flesh; for as far as we have been able yet to discover, all the communications are but repetitions of thoughts once existing in the minds of those who at one time dwelt on the earth; and, palpably, if they communicate other thoughts, then we are unable to determine that the personality sending such thoughts is the same as it may pretend to be, namely a spirit of one who once dwelt on earth. Here is the great bridge to be crossed in the problem of psychic phenomena: and until the evidence of identity can be demonstrated to be absolute, or at least as convincing and conclusive as what is demanded in a court of justice, we do not seem to be justified in accepting any alleged proofs of such intercommunication."

Much that Mr. Frank says here is doubtless true; communications in the past which are in any way convincing are indeed rare; the problem involved is the *crux* of psychics. At the same time, I contend

that the question can only be solved satisfactorily in this manner and in none other. We can only prove the actuality of "spirits" by their communications—by getting them to communicate with us through the instrumentality of mediums or psychics, and proving their identity. If they fail to do so, the whole case remains "unproven," as the Scotch would say. And I would be the last to say that this stage of uncertainty has as yet been passed. At the same time, I cannot but feel that the *method* is the correct one; and that actual proof can come in no other way. Mr. Frank himself seems to admit this in speaking of thought-photography, for here he says: "That fact (of thought-photography) once established would lead to the question of the continuity and possible perpetuation of such external thought-forms, and the possibility of an aggregation of such thought-forms in an ultra-material substance that might constitute a personal frame for future existence." Quite so. The continuity of thoughts after the destruction of the physical brain. But that is simply the problem in different words. If any such entity continues to exist, what is to prevent its communication with those still in the flesh,—provided it can find a suitable instrument to render such communication possible? In other words, why should not spirit-communication be a fact,[1]—once granted the existence of some form of spirit?

Of course, it is all a question of evidence, of fact. Have such communications taken place; are they

[1]Not necessarily a fact—but a possibility. (The author.)

taking place now? Many answers would be given to this question: A positive "Yes" from the spiritualist; a positive "No" from the materialist and the sceptic; and all the various grades of hesitation and doubt between. It is a question of evidence—and individual experience and prejudice. What will convince one may often not convince another. And I think Mr. Frank is quite right in saying that positive evidence of the sort desired is very rarely (he says never) obtained. I quite agree with him, also, in his analysis of certain cases recently published, in which he shows their inherent weakness—particularly the evidence brought forward by Sir Oliver Lodge in his book "Raymond," which I myself have elsewhere critisized, coming to the conclusion that there is really no good evidence at all here in favor of spirit return. I, myself, however, should be inclined to attach greater weight to pure chance coincidence and guessing, in this case, than Mr. Frank has done,—since it would be quite possible to produce any number of "photographs" of this description—every group of officers who went to the front has probably had one or more such photographs taken, in much the same form of grouping. The evidence as it stands, in this case, is extremely weak.

In conclusion, I wish to state that I believe Mr. Frank has, in his book, summed up the evidence both *pro* and *con*, in relation to accepted scientific facts and their bearing upon the great question of survival, in a thoroughly interesting, scholarly and instructive manner; and has thrown many illuminative side-lights upon the questions involved. If he differs

in some respects from the present writer, that is only to be expected in so involved and problematical a field as this; but on the other hand, our agreement is very close in all the main issues involved. Mr. Frank has approached these baffling questions from the point-of-view of physical science, and has taken no step which was not justified by the facts,—save here and there, where he has ventured upon hypothesis—which is the privilege of all original thinkers and writers. Mr. Frank's book deserves to be widely read and appreciated, and it is in the hope that this will be the case that I am pleased to furnish my mite in the way of drawing attention to it by recommending it as a scholarly and interesting résumé and presentation of the views of modern thought upon that most vital of all modern questions—one which should be foremost in the minds of all thinking persons at the present time, viz.: Can Science Answer the Riddle of the Grave?

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BOOK I

Scientific Negations of Immortality

CHAPTER I

The Demands of the Scientific Method

To approach a subject, which has so long fascinated and perplexed the human mind, by the scientific method, may, indeed, seem to be an unnecessarily impertinent folly.

Why demand the demonstrative method of science —where faith and, as many insist, only faith can satisfy? Is it not far better either to believe or disbelieve and cease to trouble the mind with problems that are apparently insoluble?

Even cool headed scientists are warning us that on mystical matters we must not introduce the severe methods of materialistic interpretation but must leave room for faith where we must needs stare blankly into Nature.

"It is important for the materialist to realize," says Benjamin Moore ("Origin of Nature and Life" Home Univ. Library p 23) "that his methods of experimentation cannot be extended to touch or test things of a purely psychical nature, and it is equally important for the psychologist to remember that he has only so far been dealing with materialistic models, and studying the substructure in which mental acts occur. Neither set of philosophers, whatever their beliefs, can prove or disprove anything as to the existence of mind apart from matter, or what are the subtle relationships of mind and matter."

It is a serious question, however, whether this is not yielding to the attitude of the average mind and relinquishing from labor in a field where there are prophetically only insignificant results to be attained. It is easier to believe or disbelieve than it is to probe and think and search.

But such is not the way of truth. If the future existence of a being who once tenanted the flesh is a fact in Nature, its final discovery must not be despaired of; and judging by the success of science in mastering heretofore seemingly insoluble problems in the world we ought to feel that the discovery of an after life, if true, will yield to search and analysis, as did the rate of velocity of a ray of light or the composition of the once hypothetical atom of the chemist.

To disbelieve and thus to shut down the bars to the approach of truth, no less than to believe, and to ignore critical investigation, is the way neither of science nor common sense.

It is better to guess and to think than not to think at all. To guess wrong does no harm, for, at least, it keeps the mind active and the road of progress unbarred by any obstacle. But to guess, and then to stop still at the guess, and set it up as the shibboleth of truth, is the way of all error.

"Imagination is fundamentally as important for a student of natural science as it is for a poet or a devotee of religious belief. It is by the use of the imagination that science is led from discovery to discovery, but the essential difference lies in this, that in the legitimate domain of natural science the work of the imagination must be proven by the test of

experiment" says Moore, which is of course indisputable. But we must ask why should this same imagination be debarred when scientifically investigating a supposedly mystical experience, even though apparently the test of experiment cannot be applied.

Does not the crux of the problem lie in that very possibility? Are we sure that the strange experience which leads man to believe in an after life cannot be experimented with according to "materialistic models", and subjected to the necessary test of laboratory analysis?

The end of this life may be, indeed, where

"On the darkened death bed dies the brain,
That flared three seventy times in seventy years;"

but to assume that it is so, without proof, is to let the blind lead the blind, into the possible ditch of ignorance.

There will probably never be an end to the discussion of the possible immortality of human life in an after world until the issue is scientifically decided one way or another. The crux of the present issue is that two extreme views exist, both of which claim to give finality to the problem. The one is positive the other negative. There are those who insist there is ample and unqualified proof of the after life of mortals, and those who insist that not only is there no proof at all of such a life but that on the contrary there is absolute disproof of such an alleged fact.

Now I propose to omit in the first part of this discussion all reference to the alleged proofs of im-

mortality, and to pay exclusive attention to the so-called disproofs.

If it is absolutely disproved and that truth is revealed in Nature then of course all further discussion is useless and the human mind may be at rest. In the second part of this treatise I shall review the so-called proofs and the answers thereto by those who claim otherwise.

We must, however, not lose sight of the logical question at issue. The issue at present is not whether any doctrines of immortality have been disproved; or whether any of the alleged proofs of immortality have been overthrown or disqualified.

With such problems we have for the moment nothing to do. We are asking whether or no Science has presented any absolute proofs that in Nature not only no such a fact has been discovered, but that on the contrary Nature absolutely asserts that there is no such fact.

We have not here to do with opinion, and its accuracy or inaccuracy; we have only to do with facts; is immortality as a fact proven absolutely by science to be not only imaginary but utterly impossible? So long as science cannot prove this as a finality, then, of course there remains the possibility of such an after life. We have here to do only with the disproof of the alleged fact, not with the disproof of an opinion or the disqualification of an alleged proof.

In discussing the possibility of an after life it seems ever necessary to call attention to the difference between a scientific study of the problem and its approach from the angle of "faith". It seems, much

to my surprise, quite difficult for many to keep the distinction clearly in mind while contemplating this problem. In the scientific pursuit of a truth we are not endeavoring to please or gratify a traditional predilection, nor are we attempting to force a conclusion that is not consonant with the facts of experience and the laws of Nature. We are endeavoring merely to hear what Nature may indicate, or what we feel justified in determining as her actual laws.

The wrench, however, seems to come to the feelings of the investigator, when Nature, apparently, demands a decision which is directly contrary to the predilection or traditional notion implanted by teaching and hereditary influence.

This has always been the storm centre between belief or theory and discovery. It was so when Galileo undertook to reveal his discovery of what the heavens taught, contrary to what had long been believed; and it is so whenever any discovery or invention runs counter to the common grain of accepted culture. It has been argued by some that there is no ultimate discovery of any truth in Nature; that what we call a truth is simply a mode of thinking that accommodates the practical demand of our needs; that we think a thing so or so, because of a certain crisis in our experience, and by so thinking we relieve the tension.

"There is no such thing as absolute thought," says Irving King (Monist v.15 p 261) "for thought is an essential process of abstraction from an undefined matrix of possible experiences for the solution of a particular crisis . . . That which relieves the tension is undoubtedly an aspect of reality, but it is

true of the whole only as the whole is in contact with the particular."

This point of view, the pragmatic, insinuates that we never discover a truth that may be regarded as an absolute reality; all we do or can discover is a temporary relief in thought to a critical juncture, over which we must be lifted by an hypothesis. This explains no less, according to this philosophy, the doctrine of the divine inspiration of the Bible, than the theory of atoms, or the nebular hypothesis.

In short that only is truth, which is a happy guess for the time being, and relieves the mind of its tension because of a stone wall which man has reached in research or experience. Every alleged truth is only a temporary bridge lifted in imagination over the gulf of universal ignorance.

Therefore any interpretation of experience which helps man in the conduct of life, which relieves him of mental discomfiture that would interfere with the dignity and morality of his conduct, is an actual reality and must be accepted as truth. "It is notorious," says this same writer, "that no argument for the inspiration of the Scriptures, for immortality, for the divinity of Christ is convincing to any one who does not believe in them already as facts of immediate experience."

If this were to end the discussion it would be a happy cutting of the Gordian knot of scientific and philosophical problems. One wonders, however, if this deduction is readily made from the indoctrination of theology, whether it could as well be discerned in the discoveries of science.

It is difficult to apprehend the notion that the

hypothesis of Laplace, the revelations of the Galilean telescope, Dalton's atomic theory, and von Fraunhofer's spectrum analysis were the result of merely the willingness to believe. Of course a mental crisis had been reached in research, which these hypotheses for the time being quieted, and therefore satisfied the moral demands of thought. But the difference in the experience of the theological and the scientific thinkers lies in the fact that the one goes out of his way to discover a possible truth in Nature, whereas the other attempts to run away from it.

If, however, the pragmatic theory of science and philosophy were true, then it would merely indicate to us that any religious doctrine, or imagined reality, which at one time had been accepted because it satisfied the moral requisites of an age, would cease to be true so soon as an age no longer required its assistance in its ethical conduct. So soon as an age outgrew the moral validity of the beliefs in any theological doctrine, so soon that doctrine would cease to be true or a reality.

By the light of this theory one need only go from age to age and discern the moral effects of any doctrine, that is, the application of the doctrine to the ethical requisites of any age, to determine its reality or non reality.

Judged from this philosophy all the doctrines of Christianity are rapidly becoming untrue, that is they cease to be realities in Nature, because they cease to be necessary to the ethical conduct of the race. So far as the reality or non reality of immortality, then, is concerned the discussion relative to it

may as well cease at once, according to pragmatism; for its truth as a finality will never be discovered, as it will be retained as a truth in Nature so long as belief in it is a demand of the ethical conduct of man, and cease to be a truth so soon as its moral function ceases.

But it seems to me science will never be satisfied with such a decision.

Whatever we may conclude as to the validity or non-validity of an alleged truth, we cannot deny that the acceptance or rejection of such a validity is always in keeping with what man thinks is necessary to his ethical conduct or his mental peace. In that field pragmatism is thoroughly operative. We do always determine the meaning of our experiences in such a way as to bridge us over a gulf of suffering; in such a way as to calm a mental crisis or relieve moral discomfiture.

It may therefore safely be recognized, so far as belief in immortality is concerned, that it will ever be accepted or rejected as a doctrine according as the individual feels that it is required either to relieve a mental tension, in his philosophy, or a moral disturbance in his conduct of life.

But this is far away from the study itself of a fact in Nature, whether or no the mortal lives after death in another life. We are here concerned only with the alleged certainty of certain scientific investigators that they have forever solved the problem and attained a negative answer.

CHAPTER II

Why Philosophy Has Failed

To explain the object of this treatise, let me illustrate. It is contended by many that if any or all of the arguments advanced in favor of immortality are disproved then we have proof sufficient that there is in Nature no such thing as an after life. For instance if we return to the classic arguments found in Plato's Dialogues, as those advanced by Socrates, and refute them, what shall we have left over as a possible proof or disproof of the theory of immortality? Will the acceptance or the rejection of those arguments have any bearing at all on the real issue?

In the "Republic" for instance Socrates is reasoning with Glaucon and says: "You admit that everything has a good and an evil; . . . . in everything or almost everything there is an inherent evil and disease . . . . The vice and evil which are inherent in each are the destruction of each; and if these do not destroy them there is nothing else that will . . . . Consider then, Glaucon, unless some bodily evil can produce an evil of the soul, we must not suppose that the soul, which is one thing, can be dissolved by any merely external evil which belongs to another." Again he says: "If the inherent natural vice or evil of the soul is unable to kill or destroy her, hardly will that which is appointed to the destruction of some other body, destroy a soul or anything else except that of which it was appointed to be the destruction . . . . But the soul which cannot be destroyed by an evil, whether inherent or external, must exist forever; and if existing forever, must be immortal."

Now, palpably such a puerile argument as this, though it prevailed as effective for many centuries, can be easily overthrown; for it arbitrarily assumes that the soul is a distinct, simple, unextended, and immaterial substance, inherently incapable of destruction from within or without. Modern psychology utterly demolishes this metaphysical presumption and makes the argument appear ridiculous. [1]

In the same manner almost every argument advanced to favor the theory of immortality, based on pure metaphysics, and void of scientific support, may be shown to be false and untenable. Even if we carefully study the most recent of these arguments, or presumptions, advanced by the late Professor William James, the so-called "permissive" argument, we shall find, likewise, that it cannot be sustained under logical analysis. He argues that the infinite is surcharged with the "life of souls", and when the brain acts these souls, so to speak, may shine through it and variously display themselves. "Suppose that the whole universe of material things . . . . should turn out to be a mere surface veil of phenomena

[1] "My final conclusion about the substantial Soul is that it explains nothing and guarantees nothing. Its successive thoughts are the only intelligible and verifiable things about it, and definitely to ascertain the correlations of these with brain-processes is as much as psychology can empirically do. From the metaphysical point of view, it is true that one may claim that the correlations have a rational ground; and if the word Soul could be taken to mean merely some such vague problematical ground, it would be unobjectionable. But the trouble is that it professes to give the ground in positive terms of a very dubiously credible sort." (James' "Psychology" vol. 1, 350.)
"Scientific psychology is a creation of the present century. It differs in three principal ways from the speculative psychology which preceded it. (1) It is freed entirely from the influence of philosophy (. . . metaphysics) and it has done this most effectually by insisting that mind is to be examined as a structure, and not merely as a group of functions." (Titchener, "Outlines of Psychology" p 28.)

keeping back, or hiding, the world of genuine reality. Suppose that

> Life, like a dome of many colored glass,
> Stains the white radiance of eternity.

Admit that our brains are such thin, half transparent places in the veil. What will happen? Why, as the white radiance comes through the dome, with all sorts of staining and distortion printed on it by the glass, even so, the genuine matter of reality, the life of souls, will break through our several beings onto this world in all sorts of restricted forms," etc.

Manifestly this is pure assumption with not the least possible scientific verification, and may therefore be dismissed as a poetic fantasy. Nevertheless, if any and all arguments which have been advanced, or may yet be conceived, shall be demonstrated as false and fallacious, that fact of itself, would not, through their default, disprove the possible reality of an after life. These theories are simply straw men presented to be cast down by more agile minds than what conceived and constructed them. Their disproof establishes nothing.

If we are to learn what science actually has accomplished in the field of discovery relative to a possible future life, we must investigate the arguments which profess to disprove the alleged fact in Nature, and not be satisfied with the overthrowal of a merely arbitrary or presumptive argument advanced in its favor. In other words the disproof of an alleged proof, does not in itself involve the actual disproof of a possible fact. What arguments have been advanced to disprove the fact in Nature alone concern us and these now we shall proceed to examine?

CHAPTER III

The Materialistic Negations

The first of these arguments is the physiological. In the language of Haeckel ("Riddle" p. 204) "The physiological argument shows that the human soul is not an independent, immaterial substance, but, like the soul of the higher animals, merely a collective title for the sum-total of man's cerebral functions; and these are just as much determined by physical and chemical processes as any other vital functions."

The definition of the soul in its physical phases, here given by Haeckel, is undoubtedly correct and will be so accepted by all careful thinkers. But does the result logically follow? That is, if what we call the soul is merely the sum-total of the cerebral functions of man, does the thinking principle cease when the chemical and physical processes of the brain also cease? In other words, when the brain dies does thought or the thinking energy also die?

In order to answer this question with scientific logic we must first ask another. That question is, Does Nature think? Is there a process of thinking going on in the universe, antecedent to the generation of man on earth?

If it can be shown that there is such a process and that man himself in the exercise of his cerebral functions is the product of this cosmic psychic process, it will have a serious bearing on the so-called

physiological argument against immortality. Let us study, then, the question: Does Nature think; is the entire Cosmos built on a logical basis; and is the human brain itself but the product of this universal ratiocination?

A brief consideration of natural phenomena will, I think, prove that cosmic thinking is a process in Nature long antecedent to the development of a brain in animal or man. If we descend to the lowest form of matter and observe its origin and development in the world, we shall find it difficult to believe that it does not involve a process which is the direct result of a rational principle in Nature.

We know that the chemical molecules are the product of the mathematically accurate association of atomic units, and that wherever it is impossible to correlate such affinities the specific molecule cannot be generated. It is quite impossible to believe that it requires a process of thinking in the human brain to detect the mathematic valency, in H^2O, either in its analysis or synthesis, and not to believe that something akin to the same process must have been active in Nature when these elements combined to make a molecule of water.

It is not necessary to assume some pre-existing cosmic, individual mind wherein this thinking consciously acted, to accept the deduction that Nature thinks in the operation of all her phenomena.

There may be a process of unconscious as well as conscious thinking. In fact we have learned in the profounder studies of modern psychology that the larger part of the thinking in the human mind, or

brain, is unconscious. Therefore it is not unscientific or presumptuous to assume an unconscious thinking process in Nature. But whatever the psychological process may be, that something akin to thought inheres in natural activities is a necessary deduction from the fact that the apprehension and analysis of these phenomena by man require a mental process we call thinking.

In order to understand Nature we must appreciate the fact that she once existed in a chaotic state and that when in that state all the ultimate elements of which her phenomena are composed were reduced to a condition of absolute identity. Chemists and physicists now inform us that they have succeeded in reducing matter to a state of such identity.

"The electron is the ultimate unit of matter", says Harry C. Jones (In Electrical Nature of Matter p 22). The atoms are made up of electrons, or disembodied electrical charges, in rapid motion; the atom of one elementary substance differing from the atoms of another elementary substance only in the number and arrangement of the electrons contained in it. Thus we have at last the ultimate unit of matter of which all forms of matter are composed. [1]

Now this last unit of matter is always the same, and when Nature was in a chaotic condition it simply meant that there was absolute equilibrium between

[1] "It is now realised that these indivisible atoms, uncreatable and indestructible, which Newton supposed to be turned out completely formed by the Creator, are themselves composed of thousands of smaller particles. . . . The atom, just like the chemical molecule at a different stage, or the fixed organic species of the biologist, is a point of stable equilibrium in upward evolution." ("Origin of Matter and Life", Moore, p 42.)

all these ultimate identical units; differentiation being impossible because each unit oscillated to the same rhythm as all the other units.

Not till the primary equilibrium broke up; not till certain strains in the ether slipped away from the rest; was matter as we now know it possible. The first strain of ether that slipped away from the ether-mass was the first unit of matter, the first ion, or electrical charge. Once free it sought for companions, and could find these only as other units slipped away and moved in such manner as to make a union with it possible.

Now the question is, How came these primal units finally so to associate in precise mathematical proportions as to aggregate into the great multitude of things that we call the Cosmos? One says it was the result of Chance.

Nature after infinite aeons of concussion and intermixture resulted in the marvellous stable union of elements that constitute what we now regard as the static universe. It may be so. But does that inference neutralize the conclusion that Nature exercised thought during the process of the admixtures? To answer this question we must first answer another. What is Thought?

Is not thought a mental effort to bring differentiable elements into logical relationship? And what is a logical relationship? Is it other than the establishment of such associations as are necessary for certain ends and uses? Is it not true that in all Nature purposive relationship is discerned? We do not mean by this antecedent, primordial design, uni-

versal, purposive intention; but that each element of the universe is so related to all others as to permit the establishment of ultimate relations which are logical and intentional.

While Haeckel, for instance, is compelled to deny "the anthropomorphic notion of a deliberate architect or ruler of the world," as he says in his Riddle; on the same page he admits that "the idea of design has a very great significance and application in the organic world. We do undeniably perceive a purpose in the structure and the life of an organism. The plant and the animal seem to be controlled by a definite design in the combination of their several parts, just as clearly as we see in the machine which man invents and constructs".

This is true and had Haeckel only bethought himself that the design cannot be as clearly discerned in the universe at large because of the limitations of the human mind to perceive it, he would not have fallen into the inconsistency of saying in a few paragraphs previous that "the idea of 'design' has wholly disappeared from this vast province of science". ("Riddle of the Universe" pp 260-61.)

Matter thrown together conglomerately and in a manner that makes a possible constructive end unattainable, might be said to be the result of Chance. But matter, thrown together in such manner that the association is directly amenable to specific ends and uses, cannot be said to be the result of absolute Chance, but must be the effect of a certain tendency inherent in the elements that makes the logical association a possibility.

In fact to say that any effect in Nature is the result of Chance is to beg the question; for, whatever comes to pass must be the result of a tendency existing in the object or element to effect certain results. If there did not exist an antecedent, inherent tendency in the electrons to unite in specific ratios for the generation of specific elements, then such elements were impossible and the universe would not exist. As J. Arthur Thomson says, "It is difficult to see much meaning in the term (Chance) except that we are very ignorant of the antecedent conditions."

Could we know all about the elements that enter into the composition, we would doubtless be able to show the exact reason why they unite as they do. That is, if we had infinite knowledge of the universe we would doubtless be able to perceive the "purpose" or "design" inherent in each atom, that Haeckel admits we do discern in all forms of organic matter. The common error of the chance theorists, the Cadentists, may I call them, [2] is that they postulate a theory on the basis of ignorance. What they call Chance is simply natural action, the origin and necessity of which is beyond man's apprehension. [3]

We are ignorant of all the forces that play upon the electrons and atoms, and therefore cannot fore-

[2] From Latin Cado — to fall.

[3] "The mystery of life is often spoken of as if it were the crowning mystery of all things. . . . But the riddle of the universe lies much deeper than that. The evolution of life from inorganic materials is only one stage more mysterious than the evolution of any one form of matter from another. . . . The fundamental mystery lies in the existence of those entities, of things, which we call matter and energy, and in the existence of the natural laws which correlate them and cause all those things to happen, which the natural philosopher observes and classifies and correlates, but cannot explain in one single instance. (Moore "Origin of Life and Matter," Moore p. 17-19.) (Boldface type by the author.)

see why they act as they do; but we do know that they unite in exact mathematical proportions, and it is difficult to understand how a mathematical proposition can be worked out in natural phenomena without the process that we would call thinking.

We certainly know that man consciously thinks when he is engaged in mathematical labors; consider how many centuries of hard thinking it required of the human mind merely to find out that very secret of Nature to which we are now referring.

Is it not legitimate to ask why, if it requires so much mental activity to discover a logical process in Nature, should it not require as much if not considerably more mental activity to originate and perfect the process we are contemplating?

Certainly the man who conceived and constructed a watch is far more intelligent than the man who takes it apart and again sets it together. The latter has extracted its combining elements and has learned the rationale of their relations. He had a very considerable labor to accomplish this. But the labor of the man who created all these elements and conceived their logical relations, that is, who invented the "design" that made the watch possible, must have been very much more intelligent.

CHAPTER IV

Does Nature Think?

If it be said that thinking cannot be postulated of Nature because there is in Nature so far as we know an utter absence of conscious activity, we need but return to an analysis of man to find the fallacy in the objection. It is now well known that many of the most difficult mental processes within the capacity of the human mind are unconscious processes.

We have what are known as mathematical freaks, who accomplish wonders that seem to be miracles to the ordinary man. These mathematical prodigies all operate their minds in these most difficult mathematical labors unconsciously. We have the well known story of the creation of Kubla Khan by Coleridge in a dream: R. W. L. Stevenson's "dream-brownies," and many other like experiences. Of course these are unconscious processes within the instrument of the brain; Nature, as we may say, thinks without a brain; but if unconscious thinking is possible within a brain, how much more may it be possible in uncerebrated activities.

Just as synthesis requires a higher intelligence than analysis, we must appreciate the fact that a higher intelligence is required by synthetical Nature than by interpretative and analytical man.

We cannot but regard Nature as thinking much more profoundly in the origination and development

of all her material agencies and processes, than is the mind of man when merely discovering and analyzing those processes. If we can rightly declare that the human mind thinks when dissecting matter and discerning its inmost component elements, then how can we regard Nature other than as thinking when she assembles these elements in the infinitely complex manner that the Cosmos reveals?[1]

To say with Lord Kelvin and Lucretius, that the universe came into existence as the result of "the fortuitous concourse of atoms", is but to admit our ignorance of the nature and inherent qualities of the atoms. As Professor Thomson says, "What does fortuitous concourse of atoms mean, unless simply a concourse whose *antecedent conditions* are unknown to us?"

Were we absolutely acquainted with these antecedent conditions we would be able to trace the

[1] "Throughout the universe of infinite objectivity — so far at least as human observation can extend — there is unquestionable evidence of some one integrating principle, whereby all its many and complex parts are correlated with one another in such wise that the result is universal order. And if we take any part of the whole system — such as that of organic nature on this planet to examine in more detail, we find that it appears to be instinct with contrivance.

So to speak, whenever we tap organic nature, it seems to flow with purpose; and we shall presently see, upon the monistic theory, the evidence of purpose is here in no way attenuated, by a full acceptance of any of the mechanical explanations furnished by science.

Now these large and important facts of observation unquestionably point to some one great integrating principle as pervading the Cosmos; and, if so, we can scarcely be wrong in supposing that among all our conceptions, it must be in nearest kinship to that which is our highest conception of an integrating cause — viz. the conception of psychism. Assuredly no human mind could either have devised or maintained the working of even a fragment of nature; and, therefore, it seems but reasonable to conclude that the integrating principle of the whole — the spirit, as it were, of the universe, — must be something which, while as I have just said holding nearest kinship with our highest conception of disposing power, must yet be immeasurably superior to the psychism of man." (George J. Romanes, in "Monist", vol. 14, page 508.)

rational method of Ntaure back to the utmost origin of all things. The universe would then be to us an open book.

But as we do not know the ultimate nature of the primal component units of the Cosmos, yet do know that so far as Nature employs these elements or units she does so to the end that the Cosmos may exist, we cannot doubt that her processes are plainly rational, and, that, therefore Nature ceaselessly thinks in the execution of her infinitely complex activities.[2]

Thinking, then, can and does go on universally throughout Nature without the instrumentality of a brain. In fact I think it could be easily shown that the brain itself is the result of the process of natural, cosmic thinking; that, in short, the human brain is the product of thought and thought is not, primarily, the product of brain. Thinking began, as we have above shown, in Nature long before the brain of man or animal originated.

Contemplate, if you please, all the marvels of Nature. How infinite, how transcendent were the methods which Nature utilized in her glorious achievements! How distant and vague is the begin-

[2] "Whenever in the natural world, what we call phenomenon or an event takes place, we either find it resolvable ultimately into some change of place, or of movement in material substance, or we endeavor to trace it up to some such change; and only when successful in such endeavor do we consider that we have arrived at its theory. In every such change we recognise the action of Force. And, in the only case in which we are admitted into any personal knowledge of the origin of the force, we find it connected with Volition, and by inevitable consequence with intellect, and with all those attributes of mind in which (and not in the possession of arms, legs, brains and viscera) personality consists. Constituted as the human mind is, if Nature be not interpretable through these conceptions, it is not interpretable at all." (Sir John Herschel — see "Monist" vol. XIV, p. 507.)

ning of all, and what incomputable ages were required for her to reach the present form and grandeur of perfection! To enable us the better to realize the triumphs of Nature, let us ask ourselves how the agriculturist, the horticulturist, the animal breeder, etc., were enabled to improve on Nature by generating forms of grains and animals and plants and fruits superior to her own superb productions?

The answer is at hand. Man accomplished these marvels, indeed, by the use of his brain and mind, but these instruments were employed by him merely to detect Nature's methods and to turn them back upon Nature to teach her how to improve herself.

Man himself never goes beyond Nature, in discovering laws, methods, processes, secrets of which she is not apparently conscious. Man improves Nature merely by stealing from her heart her own secrets and then employing them to assist her in the accomplishment of more resplendent achievements than she unassisted seems capable of. Man discovered no original ways to generate the hardier grains in pioneer fields, the more perfect rose in gentler climes, the speedier and tougher steeds for pleasure and for thrift; he did not superimpose on Nature an invention of his own which was contradictory of her methods and laws in order to attain his own creative ends. All man did was to ferret out Nature's own ways of doing things; then he used his own reason to suggest to himself how he could direct Nature to a labor that by her own method improved upon herself.

"Nature is made better by no mean,
But Nature makes that mean; so over that art

Which you say adds to Nature, is an art
That Nature makes."

Merely by imitating Nature, then, has man improved on Nature.

Are we therefore justified in asserting that man exercised the process of thought—a logical method, by imitating Nature which resulted so profitably, yet deny to that very Nature, which he but imitated, the attribute of thought and the logical method he stole from her?

If we are to believe with Haeckel, and the mechanistic biologists, that the human brain originated in a slight medullary thread, which after countless centuries attained the glory and perfection of man's cranial crown, then we can better realize how in the work of Nature there was manifest a purposive method, even though she had no antecedent pattern to follow, or ultimate design to work towards.

The brain came at last as the utilitarian result of a myriad of forces struggling toward a certain end, which never paused till the end was achieved, and the marvel of the human brain evolved. In this sense, then, the process of thought existed in Nature, long before the instrumentality of the brain was developed in the animal species to act for man in this capacity.

To say, then, that there is no thought in Nature, without brain, is manifestly to err. All we can rightly say is, that judging by earthly experience *human* thinking without the instrumentality of a brain seems impossible. In such a statement, however,

we can refer but to the process of thinking within what we know to be the limitations of the human brain. But the very question for us to decide is whether any psychic activities continue to exist outside the brain after once initiated within it.

If such psychic activities do continue, then there would be a residue of human thinking which would continue to operate in an invisible sphere or plane, not only outside the brain but also outside human consciousness.

Before, therefore, we can positively conclude that the destruction of the physiological brain would put a total end to human consciousness, or continued psychic activity, we must learn what becomes of the thoughts which are generated in the brain; whether they are coterminous with the brain's existence, or whether after the brain dissolves they may still continue on independent of its agency.

Again I wish to emphasize that, of course, we cannot deny that all the thinking within the human consciousness, or in the plane of physiological unconsciousness, is accomplished through the cranial instrument, and the nervous system; but if it could be shown that thoughts themselves, once emanating from the brain, and existing in free ether, still continue as actual, invisible forms of psychic activity, would we then be justified in denying that they may thenceforth impinge upon and aggregate or organize invisible matter, which may be even more sensitively responsive to their vibrations than the substance of the brain? Until this possibility is met and decided

we have no right to conclude finally that any conceivable after existence is impossible, because of the destruction of the physiological instrument of thought.

To such a possibility, then let us address ourselves.

CHAPTER V

Can Thoughts Be Photographed?

If we could understand the actual nature of a thought it would greatly assist in solving this problem. Physiological psychology is leading us away from the supposition, once entertained, that thought is a mental process free from essential relation to matter. We scarcely now subscribe to the definition once rendered by Dr. Dwight who said "Thought cannot be superadded to matter so as in any sense to render it true that matter can become cogitave." We know now that thought is correlated with vibrations in the gray matter of the brain and nerves, without which there would be no thinking in the human organism.

It is now thoroughly scientific to speak of thought not as something mysterious and super-material, but as a motion, or a vibratory process of matter. Such an interpretation is frequently denounced as materialistic; but even so, it has wondrously spiritual or refined consequences which behooves us well to observe. The alleged materialist, Dr. Ludwig Buechner, in his famous work on *Force and Matter* said many years ago, "That thinking must be a mode of motion is not only a postulate of logic, but a proposition which has lately been demonstrated experimentally."

Instead of such a definition discouraging even the

most spiritually inclined, if properly apprehended, it should elate them. For we shall pursue the stern logical deduction of this proposition and see where it fetches up.

That thought is now determined to be a mode of motion is proven by the very structure of the brain and the nervous system. Says Dr. Carr, in a recent lecture in London reported in the Athenaeum, "The structure of the nervous system leaves no doubt whatever about the function in one important respect . . . . It is contrived solely for the transmission of movement by the propagation of vibrations." If the instrument is so contrived, it is palpable that the vibrations are the *thought* forms that generated the structure in response to their functional demands. These thought forms or vibrations, of course invisible, may be pictured, says Dr. Carr "as a neural process occurring very much in the manner of the passage of an electric current through a circuit in which there are interposed resistances. The resistances . . . . must be something like the glow lamps of an electric installation". If thought, then, is a mode of motion, or an activation of invisible matter into responsive vibrations, it is proper to ask what becomes of the vibrations? Do they die within the substance of the brain, or dissipate in the action of a muscle they set going. The law of the transmutation of energy would caution us to look for the continuity of the unabsorbed quantum of the vibration in some form of motion elsewhere.

The process of thinking is that of a circuit, or a round of movements. First the nerves are affected

by an external stimulus; this stimulus passes in vibrations over the ingoing nerves, awakening in the will a responsive movement which descends in vibrations down the outgoing nerves and ends in some muscular action.

But is that the end of it? Does not the muscular action continue in some transmuted form. It certainly does. The vibration coming from the brain commands the movement of the foot, the foot strikes a pebble, the pebble rolls down a hill carrying sand and dirt with it, disturbing its surroundings, and then falls into a brook, causing the brook to break into a myriad of ripples, which themselves transfer motion to the air and the shores, causing incomputable vibrations, which may take a variety of different forms as they pass on.

Thus we are unable to trace the ultimate transmutation of a mental vibration once it is begun. This is physically demonstrable when we consider an external muscular action. But is not the same law applicable when we consider pure thinking? Is it not true that our thoughts though unexpressed are constantly affecting others with whom we communicate consciously or unconsciously? We are accustomed to say a thing is "in the air". It seems to be catching; everybody senses and pursues it. It is a spiritual contagion.

Once more; we are coming to understand that the mental vibration, or the thought, operates in a most refined and ultimate form of matter. There is reason to believe that the protoplasm of the nervous system and the brain is surcharged with the energy of

electrons that are constantly escaping from the dissolution of its own atoms. Until, then, we are thoroughly acquainted with the nature and possibilities of the radiations from the protoplasm [1] in the process of thinking, we are not permitted to reach any final determination as to its ultimate history.

Supposing, for instance it would be demonstrated as a fact that a thought could be photographed. In that case it would be shown that a thought form has actual material substance, even though it may be impalpable, imponderable and invisible. Certainly it is not possible to photograph nothing; and if it is something that is photographed, then that something must be substantial. Thought, then, if capable of photographic reproduction, must be substantial, howbeit invisible.

But if a thought can be photographed it is an entity; the question then for us to solve would be the possible continuity of such an entity, after it has ceased to be a reality in the brain. If it has con-

[1] On this point I have elsewhere said: "There is, however, a still more marvellous differentiation of the living matter, only recently discovered, which seems to be employed in the human being for special, important purpose. All matter is constantly emitting a subtle emanation because it is in a state of constant dissolution. . . . Passing from the physical to the vital universe, we learn . . . . that protoplasm itself is a state of matter from which this subtle, corpuscular substance is contantly emitted, and that the vital cells are always surrounded by an atmosphere of this radiant energy. In short not only are the cells constantly aging and dying, but the very material of which they are composed, is also in a state of ceaseless dissolution, with the result that they emit a constant energy, or subtle emanation, whose properties are wholly distinguishable from all other known substances. . . . Now the final discovery which science has recently revealed relative to this mysterious substance is that in vital forms this subtle element is discerned as constantly playing round the avenues and centres of the brain." "In fact it seems to be utilized" in the operation of the brain cells, as the immediate instrumentality of the will or the volitional energy." ("Psychic Phenomena, Science and Immortality." Second Ed. Pages 519 to 521.)

tinuity as an entity, then the issue that would involve a possible future existence would be the problem whether these mental entities are susceptible of individual aggregation in a more refined and invisible substance than what we know in this planetary life. Until all these problems are finally determined scientifically and experimentally we have no right to conclude that we have any final and absolute knowledge concerning a potential future existence.

There have been many alleged successes at thought photography. Most of them have been fraudulent or unreliable. One or two have attained some scientific respectability; but have been doubted by the great majority of reputable scientists. Recently, however, there has been some success recorded in France that must give us pause in our persistent denials. Dr. Joseph Grasset in his work "The Marvels Beyond Science," recites that he had seen "thought photographs" produced by Commandant M. Darget; "A proof dated May 27th 1896," he says, "exhibits a bottle which had been obtained by M. Darget by thinking intensely of a bottle he had been looking at. On June 5th following, he was requested to get another bottle and this was done in a photograph in the presence of six onlookers who signed the record, which was inserted in the *Revue Scientifique du Spiritisme*, in January 1897, together with two engravings of the bottle. Another proof showing a stick, was obtained by M. Darget by thinking of a walking stick he had just been looking at, in the red light of a dark room. Another proof of a thought photograph was obtained by

placing for ten minutes a plate over the forehead of Mme. Darget when asleep. It showed the image of an eagle."

Thus far M. Darget had approached scientific recognition for his strange work, but it remained for an exhibition by him before the French Academy of Science to give him far more reputable, and almost assured, scientific approval. The following despatch appeared in the *N. Y. Times* of Aug. 15th, 1911. As there never appeared any denial of the alleged facts contained in this despatch it appears to be genuine.

"Paris, August 11th. Much interest has been aroused by announcement of the well known scientific investigator, Commandant Darget, of the success in photographing human thought. Commandant Darget who has devoted a long time to the study of hypnotism and kindred subjects, stated yesterday to the Academy of Sciences that after many trials he had succeeded in obtaining photographic impression of thoughts of concrete objects. He produced as evidence two photographs, one showing a walking stick and the other a bottle, in each case the image being perfectly distinct. In explanation he gave the following account of the process: After staring a long time on the object to be photographed in a strong red light, he fixed his gaze with all the will power at his command, on a photographic plate that had previously been immersed in a weak developer in a dark room. At the end of a quarter of an hour the image of the object appeared on the negative. According to the Commandant's theory these astounding results are due to certain obscure light rays which he calls 'V' rays. As the Academy is a highly official body of

savants in France, and all Commandant Darget's experiments were made in the presence of six witnesses, it seems difficult to doubt their authenticity." See Appendix "B."

Now, I am not vouching for such authenticity or the accuracy of the report. I can myself discern the possibility of fraud if M. Darget were disposed to manipulate it. All I am declaring is that a highly capable body of scientific savants seemed to be satisfied that the demonstration of thought photography was an accomplished fact; and until we are able to prove such a fact to be an impossibility, we are confronted with a very serious scientific problem, that affects the theory of an after life. For assuming that the fact shall be absolutely demonstrated in the near future, then you have this issue to settle in the problem of a possible future life. You shall have discovered that thoughts are substantial, insomuch as they are susceptible to the impression of the photographic plate. If they are substantial they have form and a certain fixity; then they must also possess some potential continuity of existence. If they have an existence, such existence must be external to the brain. For the plate photographs only the vibrations that impinge it. The camera cannot enter the brain and take a picture that is there painted. It can only receive the vibrations that impinge upon it, precisely as it receives the impingment of vibrations of sunlight when it produces the photograph of an external physical object.

Thought-photography, then, once scientifically established, means the demonstration, experimentally,

of the existence of post-cranial processes of thinking, or actual thoughts external to a human brain. That fact once established would lead to the question of the continuity and possible perpetuation of such external thought-forms in an ultra-material substance that might constitute a personal frame for future existence. All these problems must be finally decided experimentally before any absolute conclusion can be justly attained respecting the problem of an after life.

The logical deduction following from these premises will be fully discussed in the second book of this work. Here, however, we are concerned only with the negative side of the argument, not with the positive, and therefore need not show how the logical consequence of the above premises would lead to a very convincing demonstration of the possibility of an after life.

All we need say here, by way of hint, is that successful thought photography would tend to demonstrate that thoughts incorporate themselves in invisible matter external to the human brain, and as such are functionally independent of it. That free thoughts, emanating from a personality, whose integrating force is its memory, its self-consciousness, these thoughts would have a natural affinity, and tend to reassemble in a new personality that would continue after the old personality had relegated to decayed matter. If thoughts are entities is it not natural to suppose that the entities which emanate from a distinctive personality would have a disposition to reassemble in the same memory, by the law of

association, which caused them to be previously associated? This is but a hint which I drop here for the present to be returned to more elaborately in future chapters.

CHAPTER VI

Has the Soul a Beginning and an End?

Ernst Haeckel says in his "Last Words on Evolution", "One important result of these modern discoveries was the prominence given to the fact that the personal soul has a beginning in existence. . . . . One cannot see how a thing that thus has a beginning can afterwards prove itself immortal."

There is doubtless much force in the contention that whatever has a beginning must also have an ending; that only that can be indefinitely continuous and indestructible which has never originated but has always existed. I shall not here animadvert on the inability of the human mind to grasp the conception of anything existing which has not somewhere originated; of conceiving an object existing in time and space, whose origin is beyond time and space. If one seriously considers the proposition one will discern the incapacity of the human mind logically to grasp such a conception. The mind cannot think of the beginningless any more than it can think of the infinite. Within the compass of human thought all existing things, including the universe itself, must some time have begun. For the mind cannot grasp the notion of nothing; or the generation of something out of nothing.

If we say matter is eternal and without beginning,

we are merely begging the question and expressing our actual ignorance of what matter really is. It is just as metaphysical, and as little scientific, to assert the eternity and beginninglessness of matter as to assert the same of Deity. In both cases the proposition is propounded merely to disguise our ignorance of the nature of both Deity and Matter. Man is compelled to think of everything which he contemplates as having had a beginning; even though its beginning may be beyond the apprehension of the human mind.

Neither can man contemplate and realize the absolute endlessness of anything, which once existed. He can contemplate its infinite continuance, its perpetual on-going; but he can do this only by fencing off periods of time, and contemplating the existing thing as leaping over the fences he holds in imagination. In this way man regards his own existence. He cannot realize everlasting existence as a quality of his own being; he can but conceive himself as continuing from day to day or year to year, or any other temporary period within his experience. But if he tries to think of himself as living forever, without any time divisions by which to measure the continuity of his being, he will find the task beyond his powers.

We cannot possibly know anything about immortal existence in the absolute. All we can logically postulate or contemplate is an indefinite or infinite continuity of being, going on from epoch to epoch, or we might better say, from moment to moment, supported by an ineradicable inertia.

Studied in this light, Dr. Haeckel's objection will

not, I opine, appear as formidable as it first seemed to be. For there are several experiences of man whose beginning he discerns, but whose end is, so to speak, endless, or continuously ongoing. For instance, Motion. We know that we can start a motion, or movement, but we also know that nobody can stop it. For by the law of the transmutation of energy, when any specific motion is intercepted it does not stop, but merely transfers its inertia to another phase of energy, which, again intercepted, transfers its inertia to still another phase of energy and so on indefinitely; the end of motion in the sense of its cessation being beyond the discovery or contemplation of man. So well known is this law that in our primers of Natural Philosophy we read that the kick of a fly moves the earth. Of course literally, that is, as far as the eye of man can see, the statement is ridiculous. For, according to man's observation, the kick of a fly can scarcely move a thread or slender twig. How then can it move the earth? But when the inertia of motion, begun by the movement of the fly's leg, is transferred to the minute particles that are invisibly affected, the motion of the kick goes on forever and forever from particle to particle, never ceasing, unless perhaps finally absorbed in the universal sea of ether that enswathes the Cosmos. By this example it is apparent that it is not always true to say that anything once begun cannot go on forever in some form of existence. Here there is a beginning without a conceivable end.

Again, contemplate the germ-plasm, which Dr. Weismann declares is immortal. By this hypothesis,

protoplasm, once having begun its existence on this planet, the vital substance, in the form the germ-cell from which the living organism evolves, never expires, but continues to manifest itself endlessly in divergent forms of expression. "Weismann maintained that the protozoans were distinguished from the metazoans, or organisms composed of a number of cells, by the curious property they possessed of exemption from decay or death. The protozoans exhibited, in the words of the German savant, an instance of potential immortality; that is to say, a natural physiological death did not exist for them; if they perished it was by accident or chance, extraneous to the laws of their organization." ("The Immortality of the Infusoria" by Alfred Binet.)

I am fully aware that the theory has been denied, and especially by Haeckel, with his usual positive assertiveness; but of late it has been demonstrated to be experimentally true by many practical biologists, and especially demonstrated in the successful experiments of Dr. Alexis Carel. So recent and authoritative a writer, for instance as Wilson ("On the Cell and Heredity") says: "Life is a continuous stream. The death of the individual involves no breach of continuity in the series of cell divisions by which the life of the race flows onward. The individual body dies, it is true. but the germ cells lives on". (p 9) See Appendix "C".

We have, then, here a vital substance, which, at least according to physical science, had a presumptive origin on this planet, and yet which never ceases, under proper conditions, to exist. "The individual organism is transient, but the embryonic substance", says Binet, "which produces the mortal tissue, preserves itself, imperishable, everlasting and constant."

Thus we see Haeckel's postulate, as to the innate destructibleness of whatever has a beginning in time, is erroneous. The germ-plasm, once begun to exist on this planet cannot be destroyed, if favorable conditions prevail, *so long as the planet itself exists.*

Nevertheless, here again we meet with a difficulty. When we contemplate the notion of immortality, it is of such vast proportions, that, as I have already declared, we cannot intelligently comprehend or even contemplate it. We cannot possibly conceive of an end of anything, any more than we can conceive of its absolute beginning. All we can possibly realize, mentally, is that of a beginning so far remote that it is beyond the apprehension of thought, and of an end, so far distant, it is lost in the vista of an infinitely extending existence. Logically we can postulate a beginning and an end; actually we can never realize it in thought.

When we say, then, that the germ-plasm is potentially immortal, within the compass of the planet's history, we will of course at once be confronted with the objection, that the planet itself is not even potentially immortal, but is itself susceptible to ultimate decay and death. Professor Ostwald regards this objection serious enough to interpose it as valid against the possibility of human immortal existence. He says in his Ingersoll Foundation lecture on "Immortality": "We can conceive of a universal catastrophe which would annihilate all the descendants of the first cell or cells. This conception destroys the possibility of calling this sort of existence immortality, since the idea of immortality iincludes not

only an unlimited possibility for continuance of life, but also the absolute impossibility of destroying it."

This objection appears very serious at first view; but let us study it for a moment.

To begin with, Weismann was not, of course, contending for more than planetary immortality for his protozoans or germ cells. So long as the planet continued to exist they also might potentially continue. Immortality here contemplated is of the nature already discussed. Nothing, for us, is immortal in the absolute sense. We can conceive of immortality as infinite or indefinite continuity of existence, only. Therefore, the protozoans may justly be said to live immortally within the co-terminous immortality of the planet itself. We are not yet positively assured that the planet will die. Such a fate is, at best, but a temporary scientific conjecture. At one time it was generally supposed that the entire heat of this planet was dependent on the emission and absorption of the sun's rays. Hence, as the sun's radiation gradually ceased the result would be vitally felt in the condition of our planet. When no more heat from the sun was procurable, the fate of the earth would be sealed and it would perish. But more recent discoveries have materially qualified this once almost universal scientific postulate.

CHAPTER VII

Can the Universe Be Annihilated?

It has been found that the earth is not wholly dependent on the sun's radiation for its heat and existence; radium has been discovered widely diffused throughout the earth; and, it is now shown that the emission of radio-active energy affords such indefinite quantities of heat for the earth that it might continue to survive after the supposed exhaustion of the sun's radiant energy. Says Soddy ("Matter and Energy", p 236) "The day has gone by when the earth is regarded as simply a cooling world. It has in its known material constituents a steady source of fresh heat, which will last not for one million, but for thousands or tens of thousands of millions of years."

And it is still further conceivable, that we may yet discover more heat-emitting energies, from conceivably yet undiscovered elements within the earth's composition. It is but a few years ago since we were totally ignorant of the existence of radium and the marvellous form of energy it emits. Much more were we ignorant of the almost universal existence of the radio-active energy which so generally pervades the earth and almost all phases of matter. Who shall deny that there may yet exist even more powerful re-vivifying energies within the planet's material which may assure it an immortality even beyond

Soddy's tens of thousands of millions of years? And in that event the hypothesis of the necessary destruction of the primal cells of life and their descendants within a conceivable planetary cataclysm would, of course, be undemonstrable.

This objection of Ostwald is palpably based on a merely vague and unsupported scientific guess;—and, yet, for argument's sake, we might admit Ostwald's conceivable possibility; a total planetary destruction which would involve the destruction of the protozoic forms of life, and the original protoplasmic germ; nevertheless, would even that admission prove effective against a conceivable continuity of protoplasmic and cellular life? He says we can conceive of the utter destruction of the primary cells of the plasmic germ; so that all life would be absolutely destroyed on this planet. Naturally we can conceive of such a catastrophe; the only question is whether our conception is scientifically justified. When we contemplate "ultimates" and "absolutes", we get into deep water and sometimes find ourselves unhappily floundering.

What is "absolute destruction and utter annihilation?" Is there any such thing in Nature with which human knowledge is acquainted? If the cataclysm Ostwald propounds as conceivable were really possible, it would involve the utter destruction of matter itself, which, by scientific hypothesis, is an impossibility. If every form of life were destroyed upon this planet, would there not still survive the very source, or fountain head of life, from which life on this planet came? If life were once generated

on the earth, would not the primal substance or the elements from which the life-germ was evolved, still remain; and would not the natural forces inherent in this substance or these elements, exercise the power of co-ordination and organization that would issue in the generation of life upon the earth? Necessarily we must admit that this would follow, unless we concede that the planet itself might be totally demolished. So long as the elements out of which the life-germ was once constructed continue to exist on the earth, it cannot be said that potential life-substance, or protoplasm, is absolutely annihilated.

But the objection might be carried to a more perilous verge. It might be contended that the same expression of life could not be reconstructed, once the universal destruction of all forms of life took place. This is true; precisely as it is true that the rose that rises from the seed (which contains the living remains of a rose that has expired) is not the same rose as the one that has gone. And yet in a sense it is the same: It contains the complete formative and vital principle of the expired rose; it is the same in the sense of being so much like the expired rose, so much its replica, that we regard it as one of the same family and species, which can always be thus contra-distinguished from any and all other species of roses in the world. In the same manner, though the entire world of life went down in a universal holocaust, the scattered relics, the dissipated elements, of the life forms would, indeed, return to the ether from which they came, but would retain the same propulsive energy as the original forms and this would urge them

to the re-production of the original unions and relations that were once established in previous expressions of life.

The principle of life would still inhere, and always will, in the elements that enter into the expression of life-forms even though dissipated into the ether; the power inhering in them would again exercise itself in reproducing life forms out of the primal ethereal elements; for there must be this tendency in these elements else there never had been any organic life generated on the planet.[1]

However, the objection of Ostwald is so fundamental and far-reaching it may be said to graze the outmost zones of Nature and challenge her utmost possibilities. For within the contemplation of his objection the planet itself might be utterly destroyed, as other planets have been; and in that event his

[1] "If a mental picture be conjured up of a world in which there is as yet no life, but where conditions are suitable for life to appear, it is evident that spontaneous production of such a thing as even a bacterium or ether unicellular organism, would by no means solve the problem, the new born cell would have no organic pabulum and would perish. The production of anything so complex as chlorophyll at such a stage is unthinkable to any one acquainted with the subtle continuity of all nature. In such a world inorganic colloids must first develop, and in time one of these must begin to evolve, not a living cell, not anything so complex as a micro-coccus, or a bacillus, not even a complex protein, carbohydrate, or fat, but some quite simple form of organic molecule, holding a higher store of chemical energy, than the simple inorganic bodies from which it was formed. To carry out such a function the inorganic colloid must possess the property of transforming sunlight, or some other form of radiant energy, into chemical energy.

Later, such simple organic compounds, by the agency of the same or some other colloid, and with a supply of external energy, would begin to condense, and form more complex organic molecules, and finally complexes of inorganic and organic matter would come into existence as crystallo-colloids. In this way without any hiatus life would be led up to, and inaugurated." (Moore's "Origin of Nature and Life," pp. 182, 8.) (Boldface type by the author.)

And again: "If all intelligent creatures were by some holocaust destroyed, up out of the depths in process of millions of years intelligent beings would once more emerge." (Page 191 idem.)

objection would naturally raise the question, What would become of the immortality, real or potential, of the living forms that had expired in the universal catastrophe?

The palpable answer is that Nature knows no such thing as absolute and complete annihilation. It does not lie within the range of possibility that this planet or the universe can be reduced to nothingness; for the reason that there is no such thing as nothingness in Nature. If there were then the Cosmos would be generated from nothing; which is a scientific absurdity.

There is no destruction in Nature of pure essence; she admits only the destruction of forms. Her phenomena are susceptible to ever-recurring dissipation; but the substance of which her phenomena are the manifestation, is itself indestructible and everlasting. If not, then we repeat, matter would be susceptible to final annihilation, and this is not a permissable scientific postulate. If, then, the planet itself were destroyed and its organized units dissipated, it would merely mean that the relationship established between the primal units to organize electrons and atoms and elements and molecules had been disrupted, but that the electrons themselves, which are the primitive building stones of the universe, would continue on undissipated and intact. Upon this interesting issue Professor Garrett P. Serviss, in one of his popular articles, has well said:

"When the extraordinary properties of radium were discovered and the suggestion was put forth that radium in the sun might indefinitely prolong

the activity of that great body, the idea immediately sprang into immense popularity, and was welcomed in the same way that a new proof of human immortality would be." "The sun is not going to die," people said. "The astronomers are wrong about it. Radium will keep it going forever; and if the sun lives, so will the earth."

"Unhappily this very thing, radium, or the property of atomic disintegration (going to pieces), which radium conspicuously possesses, furnishes fresh evidence of the correctness of the astronomical judgment that the sun is mortal. It is true that the presence of a sufficient quantity of radium in the sun might possibly increase the length of time during which the sun will continue to be a sun from the twelve million years calculated by Lord Kelvin to six thousand million years. But that is not immortality. . . ."

This, of course, is true; and as I shall show in a later portion of this treatise, when we speak of immortality in the sense of endless or infinite duration, we are attempting the contemplation of a condition which it is impossible for the mind to realize. All we can mentally conceive is an indefinite continuity of existence; but of endless continuity we can scarcely realize the meaning. All, apparently, that science can detect in nature or that can really be intelligently conceived in spiritual life is an after life of uncertain duration; yet we can contemplate the possibility of the spiritual and mental elements that make up the personality of an individual, after their dissolution, being again re-organized and re-united in another personality that may be identical with the one that has expired and dissolved. For we detect that very fact in Nature. The suns and worlds, as

such indeed, may expire after trillions of millions of years of static existence; but though those suns and worlds expire, the substance of which they are composed does not absolutely perish, for there is no such thing in Nature as absolute annihilation. I have elsewhere emphasized this point in this treatise and I find Serviss likewise asserting it with emphasis. He has, indeed, stated this scientific fact with such eloquence and precision that I take the liberty of quoting him in detail:

"As the great French preacher, Bossuet, pointed out in one of his tremendous funeral orations, nothing that comes to an end, no matter how much it may be prolonged, is anything at all when measured by eternity. It is in the end that the tragedy consists.

"Now, the great lesson that radium teaches is the perishableness of all things, with the single exception of that to which the word "thing" hardly applies—energy. Energy flits and flutters, like an intangible butterfly, and cannot be permanently imprisoned or destroyed. What we call a thing, or matter, appears to be only a momentary manifestation of energy. Every substance is made up of atoms, but atoms, as radium has helped us to discover, are not the indestructible existences they were formerly supposed to be, but are merely aggregates of electric energy which may, and do, dissolve like morning clouds.

The life of the atom being limited—although it is very, very long—the life of everything made up of atoms must necessarily be limited also. When the scientist stumbled upon the phenomenon of radioactivity, less than twenty years ago, he was like Adam beholding for the first time a dying man. What he had believed to be immortal turned out to be mortal. The atom appeared, of its accord, as a witness

against its supposed eternity. For centuries the old alchemists had been smiled at as crazy, though fascinating mystics, whose lives were passed in a waking dream. But now the atoms of one substance were seen in scientific laboratories, changing into the atoms of another substance, so that one assumption of the alchemists was proven to be true, viz., that if you can get down to the final elements of matter you may be able to handle them like building blocks, tearing down one edifice and constructing out of its bricks an entirely different one.

The bricks are not the atoms, as had been supposed, but the electrons, of which the atoms are made up. And the electrons are not matter but energy! This apparent reasoning in a circle brings us around to the conclusion that, fundamentally there is nothing in the universe, but energy; that everything we see and touch, including ourselves, is simply a phase or form, of energy, while in regard to energy itself about all that we can say is that it is that power which does and makes things.

It has not yet been experimentally proved, but it is possible, and even probable, that the same property of self-dissolution which makes radium and its associated substances so wonderful, belongs in a less conspicuous degree to every kind of matter. Everything is slowly disintegrating. The earth itself is radioactive, and its atoms are dissolving into invisible forms of energy. A rock, a mountain, the great globe itself, according to this view is no more eternal than a puff of vapor. Mont Blanc is, in its nature, as evanescent as the red cloud that burns over its head in the light of sunset.

The starry universe is like a shower of glittering sparks struck off from a blacksmith's anvil. The constellations that seem to us to glow with unending splendor will be lost in the blackness of space, only to be replaced by another burst of sparks when the

hammer falls again. The suns radiate away their heat and light and become dead stars; the atoms of the dead stars dissolve into electrons, which reshape themselves into new atoms and so the circle of change begins again.

One of the most astonishing discoveries of astronomical photography is the existence of black nebulae. Associated with some of these black nebulae are luminous nebulae. Many of the luminous nebulae have set themselves into fiery maelstroms, out of which emerge flights of newborn stars. It is not the things that it creates, but it is creation itself which is eternal."

However, would it not be true, that in such a cataclysmic event, though all forms of matter and interrelated elements were dissipated, not only would the atoms, or at least the electrons, still continue intact, but would they not be impelled in their continued existence to the repetition of their former relations and unions by the force of inherent or inherited memory? Where does memory begin and where does it end? We have it on the authority of certain scientists that memory begins in the first correlation established between the chemical elements. Biologists are now insisting that memory "is the general property of organized matter" (E. Hering) and that it runs down unconsciously even to the cellular units of life forms.

Haeckel, even, insists that the 4000 species of Radiolaria which he discovered owe their marvellous variety and specific constancy to the ineradicable memory of the cells composing and diversifying them. He also insists that there must be a sort of initial feeling or sensitiveness among the chemical atoms

that unite in molecules of matter, and this determines, of course, a mnemonic disposition among them. That is, wherever we find associated atoms or forms of organic matter, there we discern a disposition to associate because of the force of memory inhering in them. If memory, then is a conscious or unconscious state of living matter, and a recurring disposition in inorganic matter, logically, the primal electrons that combine to form primary atoms must be impelled by a like power. Once grant that memory is an ineradicable capacity or disposition among primitive electrons and atoms, then they may be scattered through the ether and still they will be disposed to re-unite as they formerly did, in spite of all the opposition that may be experienced. If that is a fact, then it follows that the life-forms to which these primary electrons give expression in earth-creations, would be re-expressed even though their original organization were apparently destroyed or annihilated. Hence the objection of Ostwald that planetary destruction would also absolutely destroy the primal germ cells and their descendants, and thus overthrow the possibility of immortality of life on earth, falls to the ground on careful examination. Naturally the same life-forms would not re-exist, but the inertia or memory of pre-existing associations would tend to re-unite them in duplicate forms of past relationship.

CHAPTER VIII

Do Primitive Life-Forms Prophesy Soul Death?

A still further objection to the fact of immortality of the unicellular forms of life, as contended for by Weismann, is advanced by Haeckel, and is quite popularly endorsed. Referring to the fact that primitive forms of life propagate not by conjugation but by fission, or cell-division, he says that even though the separated parts are identically the same and carry forward the deathless germ plasm, yet the original individual is destroyed. Hence he contends, that even the discovered potential immortality of protozoans, if admitted to be true, does not demonstrate or suggest the possibility of individual immortality.

Like the other arguments we have been considering, it seems quite formidable until we carefully analyze it. Haeckel is here willing, for the sake of argument, to admit what he had frequently denied, namely that Weismann's theory of the immortality of the germ plasm may be true; but even if true it cannot be dragged in as an illustrative demonstration of individual immortality, he asserts, because, though the undifferentiated germ plasm may be immortal, when it evolves into cell-life, and procreates daughter cells by the division of itself, the individuality of the original cell disappears. That is, there may be im-

mortality of the life substance, but there is no immortality of the individual cell-life.

Now is this true? Is it a fact that when the protozoan (the unicellular life-form) propagates by fission that it thereby loses its own individuality? On first thought it seems to; but on profounder analysis it will be seen that the apparent loss of the individual is a delusion. What actually occurs in cell-division? Simply this: the cell divides into two equal parts; the nucleus divides equally with the cytoplasm of the cell. The nucleated cell that thus divides carries off, it is true, only one half the substance of the original cell. But the other half still remains with the mother cell.

Now by what fact in biology or logic, is Dr. Haeckel justified in declaring that the reduced mother cell, which thus remains, is not still the identical individual that it was originally? Certainly the reduction in size or quantity cannot justify such an assertion. Does not the remaining mother cell retain the full capacity to grow and develop to maturity, so that it may again throw off another daughter cell? In what particular has the original cell, though reduced in size after reproduction, lost its qualitative individuality?

We shall at once see the error of this contention by contemplating for a moment the generation of a chicken. The chicken grows from the chick and the chick from the egg. Certainly if we judge these different forms of life quantitatively we shall be forced to declare that they are not at all equal, and that judged by appearance they are not the same

individual. At every state of its growth from egg to hen, the chicken might be said, by Haeckel's hypothesis, to have lost its individuality. But we know that such an assertion would be false. The egg that generates a chick is headed straight on either to become a cock or a hen. The cock egg, can by no hocus pocus, become the full developed hen and the hen-egg can by no possibility become the cock. The individuality of the egg persists in spite of the increase of quantity and the complete transformation of its appearance. The same egg continues throughout the whole process, merely deceiving us by taking on more and more substance which causes its morphological appearance to change. All the way through its development the integrity of the individual is preserved, notwithstanding the exceedingly great quantitative differences that manifest themselves in the process of growth.

Now precisely, in a contrary direction, the same condition prevails in the life history of the unicell or protozoan. All that occurs in the process of fission is the throwing off a part of the substance of the protozoan. But all the elements which are necessary to the maintenance and integrity of its individuality remain with the mother cell, or the original protozoan.

One might as well argue that a metazoic, or many-celled, form of life loses its individuality in the process of procreation, because it emits a certain amount of its substance in the process. Let me ask, why, if in copulation, the metazoan cannot be said to lose its individuality because of the permanent loss of a vital portion of itself, are we justified in declaring that

the protozoan loses its individuality in departing with a portion of its vital substance?

Manifestly the delusion has misled us, because the protozoan loses such a disproportionate amount of its substance in comparison with the loss of the metazoan, in the act of reproduction. The delusion occurs because of this fact: In the process of fission, or cell division, it looks as though two *new* cells resulted; each with its distinct and original individuality. Thus, apparently the original cell has been destroyed, and its individuality appears to be a myth.

But in point of fact what actually takes place? Has there really been any *new* cell at all generated? No. What occurs is merely the dividing in two of a single cell, one of the divided parts of which must necessarily be the original cell (that is, what is left of it) while the other divided part wanders away. The fact that the remaining portion of the original cell (the mother portion) retains all the qualitative elements of that cell, namely, that it can again grow to full maturity and successfully perform the act of fission, shows that nothing of the essential nature of the mother-cell's individuality has been abrogated. The daughter cell has carried away nothing of the mother cell essential to its original integrity; it has sloughed off a part of its substance, but in all other respects has left the mother cell intact and complete. Does the removal of a portion of the substance of a living body destroy the individuality of that body? Certainly not.

Shall we say, for instance, that when human beings copulate and thus bring forth a new individual the

individuality of the parents is thus destroyed? The parents give up a certain vital portion of the substance of their bodies (a portion of that substance, indeed, which contains all that is vital to their existence). Yet because of the surrender of this substance shall we say that their individuality has been disintegrated? That would of course be absurd. Then why is it not equally absurd to assert that when a protozoan, or a mother cell, divides itself into two vital parts, each of which is fully capacitated for all the purposes of the cell life, that thereby the organization of the original portion of the protozoan has lost its individual existence? The mother-cell remains just as individual as it ever was, all its parts and capacities in full possession, as though it had not parted with a daughter cell. Is it not then as completely itself as it was before it divided off the daughter cell? In this argument Haeckel, and all who have followed him, seem to have stumbled on a mare's nest. And it seems, indeed, quite odd that a mind, as keen and comprehensively informed, especially in the mysteries of biology as is Haeckel's, should have fallen into such a curious error. It is evidently the result of blind opposition to the possibility of a future life for man.

CHAPTER IX

Why Is Disbelief in After Life Increasing?

Another argument sometimes advanced with apparent cogency is that because, after centuries of dispute and investigation, the number of believers in a future life has grown steadily less among educated people, therefore the conclusion of a belief in an after life would seem to have no scientific verification.

A moment's thought will remind us that the reason why there has been a material falling off in the number of educated believers in an after life, is that the foundation of such belief in past centuries has been purely metaphysical and presumptive, and late discoveries and investigations of Nature have disproven the natural foundations of such faith. When people have placed their trust in a belief which seemed to be verifiable and consonant with natural fact, and have afterwards discovered that the very foundation on which they rested their faith is destroyed, they become discouraged and fly to the opposite belief, without further troubling themselves. A sense of disgust seizes them and they cease to be interested. That is really the present status of the free, educated mind today.[1]

[1]From Leuba's "Belief in God and Immortality:"
"A few years ago I began an attempt to determine scientifically the presence in particular classes of persons of the belief in God

A brief consideration of some of these arguments will demonstrate why there are so many people who have grown indifferent to the probability of an after life because of their disappointment.

In former ages the theological inoculation was almost universal and everybody believed in an after life, not because they had investigated the idea, but because people had been enjoined to believe it at the peril of their souls.

The fact that Christ had risen from the grave according to the scriptural narrative was sufficient evidence that there is a future life for all, as so eloquently maintained by St. Paul.

When, however, as the result of the Higher Criticism, the foundations of this belief began to fall by cutting away the infallibility and authenticity of the Scriptures, naturally a disbelief in immortality immediately followed. Therefore, many millions of people who formerly innocently accepted the doctrine

and immortality. . . . The groups chosen were American students, scientists, historians, sociologists, psychologists and philosophers. The choice of groups was determined chiefly by the fact that these men because of their intelligence, habits of reflection and knowledge may be regarded as in the vanguard of progress; their opinions reflect probably the public opinion of tomorrow.

. . . . We have seen that in Christian countries immortality has been far from being a universal object of belief. Very little more than half the students . . . ascribed to the belief in immortality a serious practical importance. Among the lesser scientists of the second division 21.5 per cent announced the absence of a desire and 37.7 per cent a moderate desire, while among the greater men as many as 25 per cent disclaimed any desire for immortality and 39.1 per cent more affirmed a moderate desire. These figures will no doubt cause surprise, for it is, I think, generally thought disbelievers yearn for it."

While Dr. Leuba's keen and thorough researches are interesting and convincing, they bear little on the study we are pursuing in this thesis. For whether or not intellectual persons are now tiring of the doctrine or are utterly averse to it, has nothing whatever to do with the question whether or no Nature herself presents any facts and laws that would seem to warrant at least a logical deduction in support of the belief.

or Scriptural inculcation, having learned to distrust the sacred writings, have likewise learned to distrust the doctrine of the after life and have grown indifferent to it.

But as the theological groundwork of belief in immortality based on alleged Revelation began to crumble, other arguments, philosophical, ethical, etc., were invented and temporarily accepted by many as rational solaces for a defeated faith.

There is, for instance, the so-called juridical argument. This purports to assert that because of the palpable state of injustice which universally prevails in human life and earthly conditions, the instinctive sense of justice in the heart of man must look to another and more hopeful plane of existence for its joyous realization.

Because the wicked prosper here, and the good so often fail, because "sorrow's crown of sorrows" weighs so heavily on the brow of man in this mortal state, it must needs be that there will come a future epoch in his existence where reverse conditions shall prevail, and bliss will supplant woe, where earthly ineptitudes shall be corrected.

This once great argument of Butler and Kant appealed to many minds in periods perhaps less cultured and thoughtful than our own, but there are plenty of thinking persons today who reject the argument as fallacious and absurd.

For, by what right are we permitted to assume that the state of man was intended for perfection and that in want of such perfection here he shall be permitted to enjoy it elsewhere?

How do we know that the universe contemplates justice and that all human beings must some time have it meted out to them?

Are we able to prove that the distribution of justice among human beings is any more a part of Nature than its distribution among the lower animals, or even among plants and flowers? We certainly know that in those realms the element of justice does not seem to have been endowed by Nature; and we are not justified in assuming that it is a natural element among men.

Rather, we should apprehend the fact that the sense of justice is a qualification which has been evolved in human consciousness from man's planetary experience; and therefore we have no right to assume that it is an element meant only to be ideally realized in a more accommodating plane of existence.

Such manner of reasoning has divorced many thinking beings from the Kantian and Butlerian logic, who have therefore suffered the loss of faith in immortality on such philosophical grounds. The ethical argument is somewhat akin to the preceding.

It is declared that man's life here is so incomplete and unsatisfactory, because of the fact that he can conceive ideals, and possibilties of his powers, which are not permitted to attain fulfillment here and that, consequently, some other plane of existence must await him where the realization of these dreams may be achieved.

When we contemplate how many noble minds have climbed to the very gates of their ambition only to see them closed against them; when we think of the

inventors, the philosophers, the statesmen, the artists, the writers, the painters, etc., all of whom have but begun to discern the faintest glimpse of their desire to benefit the race, and who have gone down into the dark pit in the full possession of all their powers, it is argued, it cannot but be that they must elsewhere be suffered to realize their noble aims and bless a race invisible to our eyes beyond the stars.

Here again we assume a purpose of life, inculcated by Nature, of which we have not the slightest proof or evidence.

Why is not the end of each life attained in its individual achievement even though it can discern possibilties still unattained?

Is it not as palpably logical and ethical to assume that each individual gives to life and to mankind all he achieves in deeds, and then leaves it also his residue of ideas, dreams and ideals, as a heritage by which the race may benefit and advance, and that thus his end is fulfilled, even though he be not a personal factor therein after his departure from earth?

Man leaves his deeds and thoughts behind, and these become messengers and instruments that continue his career after the dissolution of his flesh.

The immortality of character is a convincing and unassailable fact; how do we know that Nature purports to render in each life more than the heritage of character for the race; and though the individual disappears yet the character lives on, in influence, in deeds, in the fruit of brain and brawn?

Can we prove that more was intended by Nature? Then if not why insist that the individual life must

somewhere live out its future existence to satisfy the ends and cravings of its nature?

Such is the reasoning that has blighted the belief in immortality among many who had placed their confidence in the doctrine on the ethical conceptions and demands of philosophy.

Again, there is strength of appeal in the argument from the affections, that play so large a rôle in the drama of human life. Can it be, says the defender of faith, that these noble relations are established here on earth, the fruits of love, the bonds of union, the tender ties that bind together hearts and souls so firmly, only to be snapped forever by the sudden stroke of death?

Shall a mother's tears forever flow unsolaced by the hope of certain reunion with the child so rudely torn from her breast? Shall the husband never more look upon the glorified visage of the embodiment of love's ideal, whom he called his wife, and whom Death tore from him almost before he realized the depth and profundity of his affection?

Shall the orphaned child forever mourn its lost parents and not again behold their countenances ravished with joy in the embrace of paradisial reunion?

Such is the appeal *ad hominem* which for many centuries strengthened man's hope in the after life; else were God a demon to suffer love to prevail here for a brief moment only to be followed by years of separation and suffering.

But because many now study human life as a natural and not a supernatural phenomenon, the force

of this appeal has considerably weakened, with a consequential fading of the once strong faith in a future existence.

Nature may be charged with permitting, under her laws, the development and emphasis of love in the human heart, and Nature may be regarded cruel and demonic in allowing the dire consequences above indicated.

But the charge cannot be laid at the feet of any God. God does not put love in the human heart: it has not always been there but has evolved by slow stages from crude elements in the savage breast to the most refined idealism of romantic affection prevalent in modern civilization.

Moreover, man himself speedily kills love, even with slight provocation. The history of the race is the slaughter of love and mutual affection for the selfish gratification of the ambitious and intriguing.

If love can be so complacently slain for man's gratification, when necessity demands, why should man complain if Nature ruthlessly severs the tie forever?

Men's loves and affections change here upon this plane, O how often; children learn to forget and even hate parents, and parents children; husbands slough off wives and wives forsake husbands, for better and for worse; devotion almost as often turns to rebellion, as it lives in fruition.

Why then expect an after life to repair the sundered ties of human affection, when the natural evolution of love on this planet proves that love is a variable and not a constant quantity?

By what law of analogy or logic are we empowered to assume that an after life can change the processes of Nature and transform the human heart into one of permanent loyalty in love and devotion, which has here evinced its utter failure in such endeavor?

Is it not more rational to assume that Love works out its own ends in this life by implanting in the human breast a prompting to unity and humanity, which makes for the betterment of the race by the gradual perfection of a prophetic civilization?

Such is the reasoning which has compelled many minds to refuse the logic of appeal from the human affections that seemed to demand the existence of an after life for the restoration of sundered affections in this life. Hence many have fallen away from the faith.

Once more, if we return to some of the metaphysical arguments once in vogue and which strongly impressed the minds of men, we shall see that in the light of modern culture they too have failed.

Leibnitz's argument, once so potent and convincing, utterly fails today under the search-light of science.

He argued that the soul by its nature was a simple monad, utterly indestructible and indivisible; whereas the body consisted of a community of simple monads; in death the bodily monads separated, while the simple monad of the soul was freed, and flew away to other realms.

In the plane of the imagination such a conception is both poetic and convincing; but in science it has no validity whatever.

The very notion of a monad is purely ideal and

imaginary; susceptible of no possible empirical demonstration. The modern scientific atom or electron though once imaginary is now physically proven to exist; but the metaphysical monad is beyond all discovery or demonstration. What the soul is as an abstract entity no one knows or can safely guess. Therefore to place one's faith in the after life on such a hypothesis is depending on a mere rope of sand which the first breath of logic will dissipate.

Thousands, however, even among the intellectually elite, once believed and accredited it, who now relegate it to the limbo of fancy, and thus refuse to accept a doctrine of future existence which rests on such flimsy proof.

It is safe to say that the great majority of cultured people who have given thought to the subject have today cast aside all the one time effective metaphysical and theological arguments that once sustained popular faith in immortality. Even when they are so cleverly stated as by the late Prof. Royce, their flaws are not undiscoverable.

"Just because God is One," says Royce "all our lives have various and unique places in the harmony of the divine life. And just because God attains and wins and finds this uniqueness, all our lives win in our union with Him the individuality, which is essential to their true meaning.

"And just because individuals whose lives have uniqueness of meaning are here only objects of pursuit, the attainment of this individuality, since it is indeed real, occurs not in our present form of consciousness. . . . . That this individual life of all of us is not something limited in its temporal ex-

pression to the life that we now experience, follows from the very fact that here nothing individual or final is found expressed." (Conceptions of Immortality, p. 144-5.)

Such an argument of course appeals only to those who accept imagination for logic. It involves a conception of God which would be disputed by many.

It demands a metaphysical concept of spiritual unity which may easily merge in the dissolving Nirvana of the East, where the individual soul vanishes in the universal absorbent. It postulates the necessity of perfection, and thus a prophecy of a necessary after life, though as already shown there is nothing in human life or natural law that would compel such finality.

From the above brief review of some of the once effective arguments favoring the doctrine of immortality, we may easily discover the reason why among myriads of thinking people the authority of the doctrine has faded and consequent indifference toward the possibility of an after life has been assumed.

But all this has no bearing upon a scientific investigation of the possibility of a fact in Nature; a doctrine relating to the alleged fact, whether proved or disproved, can have no relation, save in the function of reasoning, to the natural phenomenon.

Though a thousand arguments attempting to prove immortality may have failed, for want of logic or evidence, their fate has no bearing on the question whether or no, as a fact in nature, man who once lived upon this planet survives elsewhere.

It must be admitted that of all the direct arguments which have been advanced by scientific thinkers against the probability of the continuity of individual life, this is perhaps the strongest. But there is a very weak spot in the armor of this argument as I have already shown in a previous chapter. Later astronomical discoveries, especially in physical astronomy, and chemistry, have very largely disproved the assertion once universally accepted as true, that the solar system and all the stars in heaven are in a process of certain death, and will be finally extinguished. All the planets dependent on central suns are now found not to depend for their vital heat upon the sun but upon certain chemical agencies inherent in their own material. As I have already covered this ground I will not repeat. (See Chapter VII.)

The dead worlds which are now found in space are perhaps the results of interplanetary concussions, which caused their disruption. Our own moon also may be a dead world, because it was clipped [1] from the earth and cannot receive direct radiation from the sun, but only its reflected effects from the earth. Perhaps because of this fact it was not supplied with the radio-active forces that sustain planets.

A fact carefully to be noted in connection with this argument is that death in Nature is nowhere a finality. Death means ceaseless resurrection or re-

[1] "The history of the moon appears to have been one long series of tremendous catastrophes. Its origin according to the theory of (G. H.) Darwin which is now generally accepted, was a catastrophe sublime in its magnitude — the tearing asunder of the molten globe of the earth, or more properly speaking, the stripping off by centrifugal force of a large portion of its periphery. After the consolidation of the moon came another chain of catastrophes, the effects of which are plainly visible upon the lunar disk." (Prof. Garret P. Serviss.)

turn to former states of existence. In this connection *I must* here introduce a very important quotation from an eminent and authentic scientist, which should put a final quietus on the force of this argument so often advanced. As I have said the universe is replete with deaths that are but preliminaries to resurrection. Final death and destruction of solar worlds and systems are unknown in Nature. In a very recent work by Marion Erwin, entitled "Universe and the Atom," I find these very suggestive passages:

"If we had only one galaxy of systems, and all the outside space be void, all the suns in that system would long since have radiated their heat into space, and by loss of kinetic energy the entire system would be non-luminous and dead. If there are processes going on which will inevitably bring the entire physical universe to a kinetic death, at some definite time in the future (since time in the past is unlimited) the human mind cannot escape the conclusion *that the death event should long ago have happened.*"

The fact that it has not long ago happened as it should by all the laws of Nature, would seem to prove that it will never happen and the imagined superlative death of all universes and systems is apparently a scientific myth. For he continues:

"Nor does it aid us to imagine a beginning of the process, unless we assume that we have under consideration only one system of a still larger universe, and that in this endless universe there is going on by operation of natural laws, an endless cycle of birth, life, death and resurrection of systems. If one system is going to its death because of the gradual loss of kinetic energy through radiation, outward into space, there must be another system in process of building elsewhere." (118-20)

What, then, astronomy intimates to us, as the old line of thinkers insisted, is not the certainty of death as an absolute principle and fact in the infinite universe, but only a passing from birth to death and from death to re-birth in resurrection. The argument is really a boomerang and returns to destroy the force of the old insistence on the foolishness of imagining future life for a human being, in face of the fact of universal death everywhere else. Just the contrary is proved, or at least illustrated by astronomy.

This same author further forcibly remarks:

"We must therefore conceive that in the universe Matter is being created by radiation from other matter all the time; that there is going on all the time the gathering up of this new born matter by gravitation into clusters and suns; that in time these suns go to a kinetic death, and finally the matter of which they are composed is converted again into ether substance. Thus we have an *endless cycle of births, lives, deaths and resurrections in the material universe.*" (p. 289.) (Italics by the author.)

"So in the empty sky the stars appear,
Are bright in heaven marching through the sky,
Spinning their planets, each one to his year,
Tossing their fiery hair until they die;
Then in the tower afar the watcher sees
The sun, that burned, less noble than it was,
Less noble still, until by dim degrees
No spark of him is specklike in his glass.
Then blind and dark in heaven the sun proceeds,
Vast, dead, and hideous, knocking on his moons,
Till crashing on his like, creation breeds,
Striking such life, a constellation swoons.
From dead things striking fire a new sun springs—
New fire, new life, new planets with new wings."[1]

[1] John Masefield.

If, however, it be true that organized worlds actually perish in time, it does not demonstrate as already stated that the energy of resuscitation does not persist. On the contrary it is now learned that it does persist, and by reason of this principle there is enacted upon the stage of the universe the everlasting drama of birth, death and resurrection. In other words, there may be said to exist a sort of life-germ of worlds and planets which forever operates in the life and death, and death and life, of the ever expiring and yet ever living spheres.

Therefore, though in the universe universal death prevails, equally life universal is everywhere.

To argue then that it is an inconsistency and an exhibtion of indecent egotism in man to assume that though once dying he may live again, is at least not consistent with the methods of Nature. For Nature permits death to revive in life. Of course the problem involved in human after-life would lie in the possibility of the continuity of the living principle in a form of survival after death; for its continuity in the form of the life-germ on this planet is now conceded.

However it might with equal consistency be argued that because death is so manifestly universal on this planet it is absurd and futile to argue that any form of survival can manifest itself. Were it not for Weismann's discovery, corroborated by many biologists since, we would indeed be justified in such an assertion. But now we know that the invisible germ continues on deathlessly if not overtaken by accident or catastrophe.

Hence Nature has taught us that at least the conception of some form of survival is not absurd or inconsistent, and that it is not unscientific or illogical for us to search for further forms that may possibly involve that of personal continuity in some other phase of matter in another plane of existence.

The question is at least suggestive if we ask: May it not be possible that just as there is a physical germ, in the human organism, which is inherently indestructible, and if not intercepted will forever aggregate to itself sufficient visible substance to reveal itself in protozoic or metazoic forms of animal life, so may there not also be a persistent germ of invisible substance so organized as to be susceptible of persistent existence in another plane of matter, through which the life of an individual may manifest itself?

This is the one line of investigation on the physical side, as I shall attempt to show in Part II which is strictly scientific and may afford fruitful results.

Thus the reference to astronomy rebounds upon the supposed argument against a possible immortality and by inference supports the affirmation of it as a natural probability, or, at least, a logical possibility.

CHAPTER XI

The Animal World and Future Life

A fourth objection sometimes presented is the following: As Science has proved man's evolution from the lower animals; and that the difference between him and them is a difference in degree and not in kind; if the lower animals have no future life, how can man have a future life?

There are several propositions that must here be singly considered in making an answer to the above assertions. First, as to the difference in degree between man and animals. Undoubtedly the proposition as stated is correct. But the very fact that there is a fixed and arrested development in the lower animals indicates an attainment in man that speaks a fuller and more triumphant unfoldment. There is a difference between the two kingdoms; but the point to be observed is that the history and destiny of the lower kingdoms are completed and finished with no possibility of further development. That is, by no possibility in the range of natural law *as now operative* can the lesser degree of the lower animal kingdom be enlarged till it shall merge in the capacity of the kingdom of man.

The culmination of evolution was attained in ancient millenniums, indeed, as shown in the manifestations of embryological development. But at each particular stage where the lower species stopped in

their unfoldment, there they remain; and while once the anthropoid apes did diverge from a former species and from them, hypothetically, man descended, yet the present anthropoids remain apes and always will be apes. In short the planetary history or drama of evolution, in so far as it relates to the transmutation of the species, is ended.

But while the history of the lower kingdoms is ended, that apparently of man has just begun. Therefore, secondly, the probable fact that lower animals have no future life really has no bearing on man's possible future existence. For who shall be so bold as to declare that man has reached the zenith of his psychic and mental, or even of his physical possibilities?

Man's reach is ever onward and upward; that of the animals is at full stop. Therefore instead of this evident fact in evolution indicating that because apparently the lower animal kingdoms have no future life, neither should man have immortal life, it would seem to prophesy almost the exact opposite for the Kingdom of Man.

The lower animal kingdoms give no indication, nor justify a prophecy, of future life, because their development has ceased, and their psychic and physical capacities have reached a full stop; therefore per contra, precisely because the kingdom of man has not only not paused in its development, but is forging ahead to unimagined possibilities, logically this development should not end but go on forever. Evolution thus seems to be a sustainer rather than an op-

ponent of the prophecy and probability of future life for mankind.

But again, it is asked, if man has an immortal soul and the lower animals have not, how, and at what particular moment in his development, did man get his immortal soul? This is a remarkably good and efficient question and must be clearly and fearlessly met.

It is not probable that we know yet enough of the whole nature of man to give an absolutely true answer. However, led by the indications of our present knowledge, we can approach it.

Before we attempt to assert anything, scientifically, about the human soul, we must study the physical instrumentality through which it expresses itself. When in a scientific sense we speak about the soul, we do not mean that it connotes the theological concept, as a something distinct and apart from the body in all its peculiarities. By the soul, scientifically construed, we must mean the sum-total of all the psychic powers; not in the sense of having been previously created and co-ordinated in the human system by some divine agency; but rather as a group or body of capacities or powers, of distinctive psychic quality, co-terminously begun and co-incidentally developed with the human body.

In the lower kingdoms we find, then, an utter absence of the physical apparatus which exists in man for the expression of his psychic attributes. The central nervous system, [1] as organized and completed

[1] "I believe therefore that we are safe in drawing the line between intelligent and unintelligent behavior, between psychic or mental and non-psychic behavior at the point where we pass from the

in mankind is wanting in the highest species of the lower animal kingdoms.

Here then would be the first indication of a cleavage or distinctive differentiation inherent in the two animal kingdoms, that of the lower species and of man. It would seem, then, that a correct answer to this question would be, in the first place, that man must have begun the acquisition of what we choose to call his soul, at the beginning of his attainment, as an animal, of the characteristics of a human being: — When there developed what we call the apparatus of the central nervous system, and especially the distinctive convolutions of the gray matter of the human brain, then the soul of man, as a group of distinctive psychic activities, begun to manifest itself. But we are permitted to go a little further in our investigation and discern a still more complete differentiation in the psychic capacities between the two kingdoms, by studying the development of the human brain.

We find that the brain of man is but rudimentally developed during a long period of infancy, and that the especial faculty which is utilized in the higher mental activities of man is wanting in the lower animal species. Elsewhere I have said on this point: "The higher we ascend in the scale of animal organisms the more complex becomes the nervous apparatus and the profounder the consciousness of the

animals without a central nervous system to those with a central nervous system. As we shall see it may be possible to draw this line still higher up in the evolutionary scale. By this I mean that an animal without a central nervous system is incapable of intelligent and conscious behavior and cannot manifest psychic phenomena, but that such behavior and phenomena may appear as the central nervous system develops." "The Science of Human Behavior," Maurice Parmelee. (MacMillans, p 262.) (Boldface type by the author.)

individual, till it ascends into self-consciousness, and still higher possible forms of self-realization. It is true there also developes in parallel lines a more complex system of nerves and cranial cells. We learn from the modern biologists that, indeed, the human brain has not only developed a much more harmonious and complex cellular organism than all inferior animals, but that there has developed a special frontal organ, which Haeckel calls the *phronema;* that the presence of this cellular organ makes thought possible to a highly developed human being which is impossible to lower animal forms of life. Indeed, even the child has not, when newly born, this cranial organ, save in a rudimentary phase, nor does it appear until after the first year. As the child develops this psychological organ grows commensurately with the unfoldment of its intelligence." (Modern Light on Immortality" second ed. p 380.)

If then we are challenged to answer just when and where the soul of man rises to the possibility of immortality, whereas that of the lower animals give no promise of it; we should say that at the birth of the human being you have the rudimentary soul, whose cleaveage is distinct in psychic *capacity* and *prophecy* from that of the souls of animals; and second, you have the distinctive promise of potential immortality when the higher cortical convolutions are begun and the frontal apparatus of self-conscious thought (the phronema) is exfoliated.

Therefore, in this particular also, the science of evolution, instead of seeming to deny the possibility of immortality to human beings, whereas it does not seem to warrant it of the lower species, rather encourages and re-inforces the probability, in the human species.

Le Conte has forcibly said: "The emergence of self-consciousness—a change so wonderful that it may well be called the birth of a spirit—takes place only at the age of two or three years. Now for the first time we have phenomena distinctive of humanity. But some one will ask how is this consistent with immortality? In answer let me again remind the reader that with every new form of force, with every new birth of universal energy into a higher plane, there appear new, unexpected and, previous to experience, wholly unimaginable properties and powers. This last birth is of course no exception. Why may not immortality be one of the new properties?" (Evolution of Religious Thought Ch IV, p. 317-323.)

It may be one of the new properties, I would say, not in the sense of being *de novo,* or a gift of power bestowed upon the soul, but a fruition of inherent tendency, a prophecy of persistent and continuous growth and unfoldment.

Once self-consciousness is begun it is impossible to prophesy its complete history or destiny, so long as there is a medium through which it can express itself.

This leads, naturally, to an old and supposedly incontrovertible objection. As physiology and psychology have demonstrated that mind is a function of the brain and nervous system, how can the individual mind survive the death of its organ—the brain? I have of course attempted to cover this objection in the previous pages of this treatise and merely repeat the argument to give it a logical setting in this series of answers to alleged scientific disproofs of immortality. (See Chapter IV.)

Until we are more intimately acquainted with the

nature of matter, and especially the subtle substance which seems to be organized in the nervous and cranial systems of the human organism, we cannot possibly assert anything as to the future of the human being, within the limitations of the brain. Until we know the complete history of the force utilized by the brain in thought, and whether that force is capable of aggregating invisible substance which persists to act and think, independent of the brain (as certain experiences indicate) we are disqualified to assert anything final as to the possibility of consciousness after the dissolution of the external brain of man.

However, there is another answer to this timeworn objection that should not here be overlooked. When we easily assert that the mind is a function of the brain, we may be speaking without sufficient forethought. Undoubtedly brain and mind co-operate; undoubtedly so long as there is a brain the co-ordinating action between the two will be so intimately associated that it will always be difficult to determine in which lies the actual priority of function.

In the answer already given I have explained the general principle that the action of rational process in Nature itself operated as a force which ultimated in the creation or evolution of the brain of the living organism. But a still more specific illustration of the probable or at least possible priority of the mental function, lies in the experience of what is known as the vicarious functioning of the mind. When, for instance, an organ ceases to function because of some lesion it has suffered, then another correlated organ

takes up the lost power of the affected organ and performs its duties for it.

Now the question naturally presents itself, How is it possible for the brain (if by its cellular action alone thought is generated) to exercise the self-selecting function of forcing an organ into service to act in place of one that is put out of commission? If the brain is a mere mechanical machine then such a possibility would be beyond its scope; it would be a miraculous performance.

Supposing, for instance, that an engine had lost one of its wheels, and the other wheels of the engine, perceiving the trouble, instead of ceasing to act because of the interference of friction should themselves take on the duties of the severed wheel and continue to carry the engine along. Would not that be a miraculous act on the part of the engine? Or, would it not at least assume a power superior to merely mechanical action on the part of the engine? Why then is it not true that when the brain so acts it proves that it is energized by more than merely mechanistic powers, and is controlled by an intelligent and directing mind?

"Sometimes it happens," says Professor Schiller (Riddles of the Sphinx) "that the man (whose organs were ruined) after a time recovers his faculties, of which the injured brain had deprived him; and that, not in consequence of the renewal of the injured part, but in consequence of the inhibited function being performed by the vicarious action of the other parts—the only explanation being that, after a time, consciousness constitutes the remaining parts into a mechanism capable of acting as substitute for the lost parts."

This seems to be the only rational explanation; and if it is correct then it would indicate the ultimate priority of mental over mechanical function in the human brain. So far then as this correlation between mind and brain has any bearing on the possibility of a future existence it would lend itself to the affirmation rather than the denial of its possibility. For if the mind can so function that it can command the submission of inactive and unaccustomed organs to the performance of duties foreign to their experience and previous education, it would indicate that it possesses a controlling influence over matter in all its forms.

Therefore, if the crude brain expires it may yet leave a refined substance, of far more durable nature than the cranial cells, through which it may continue to function. If thought actually operates in the plane of radio-activity or electro-magnetism as some contend, then the controlling mind may carry on its future labors in this magical substance which is just beginning to be studied by man.

CHAPTER XII

The Anthropological Negations

There is still another argument which with some minds is very impressive and almost conclusive. It asserts that as Anthropology has shown that the idea of a future life had its origin in the dreams of primitive savages;[1] and as it is admitted that the savage interpretation of dreams is erroneous; there can be no logical justification to the attitude that the superstitious ideas of the savage mind MAY possibly eventuate in scientific truth.

Because the vaporings of a heathen world, which, not having correct data to work from in an unscientific age, mistook a man's shadow for another being distinct from himself, and speculated that it must survive him in bliss or woe, after his personal decease; many insist that the whole conception of an after life is nothing more than a mythical product of incoherent, savage vagaries.

Primitive man saw that a man's shadow resembled

[1]From Fraser's "Belief in Immortality:"
"What is the kind of experience from which the theory of human immortality is derived? . . . The savage . . . . finds a very strong argument for immortality in the phenomena of dreams, which he commonly fails to discriminate from what we popularly call waking (!) realities. Hence when the images of persons whom he knows to be dead appear to him in a dream, he naturally infers that those persons exist somewhere and somehow apart from our bodies, of the decay and destruction of which he has had occular demonstration. How could he see dead people, he avers, if they do not exist? . . . That he sees the dead only in dreams does not shake his belief since he thinks the appearances of dreams just as real as the appearances of the waking hours." (Introduction.)

himself, and looked like another man—his double. It never deserted him till he went into darkness, and therefore it must leave him when he descended into the dark tomb.

Hence all the dreams of Pluto and Hades, and the accumulation of Scriptural myths and superstitions in all religions of the past!

The force of this objection is immediately destroyed when we reflect that all human knowledge has been the outcome of the promptings of human error. Had it not been for the superstitions and errors that sprung from ignorance, and the consequent sufferings they entailed on humanity, there would have been no knowledge of Nature and no science of the universe.

All the sciences have begun in erroneous surmises —in the dreams and vagaries that sprung from man's ignorance and necessities.

How much we owe to the meanderings of the mind of ancient shepherds who surveyed the heavens, and built up poetic possibilities for mankind in what they read in the stars! Have we not today the noble science of astronomy, which sprung from the ignorant presumptions and prognostications of ancient astrology? Shall we say that all our deductions and understanding of the stars and the heavens, vouchsafed to us by modern investigations, must be fallacious because they primarily sprung from the frothy vaporings of ignoramuses who scanned the starry worlds?

Because there was a Paracelsus, and a Cagliostro, shall we therefore say that all the discoveries of modern chemistry are to be scoffed at and rejected in-

asmuch as they sprung from ancient vaporings of heathen or Christian ignoramuses, who falsely dreamed of alchemy, and the transmutation of metals?

How often has it occurred that through the pursuit of a scientific will o' the wisp, a genuine discovery has been attained! Was it not because of the theory of spontaneous generation which at one time occupied the attention of an age ignorant of scientific method, and afterward hypnotized many scientific geniuses only to disappoint them, that a marvellous discovery was reached which has proved the deliverance of the age from its many diseases? If it had not been for that old theory, sprung from man's egregious ignorance of the nature of life, we had not had a Pasteur, who set out to find what life is, and fetched up with a discovery of the germ of life, and its myriad effects on human history? Because this great discovery originated in the ignorant suppositions or vaporings of minds ill-informed and primitive, shall we therefore declare that it must be false?

Now in like manner they who insist that there can be no truth or possibility in the hypothesis of immortality because it originated in the savage dreams of primitive people or the vaporings of ignorant ages, are building on a fallacious foundation. For the very fact that the idea of a soul and an after life originated in the ignorant imaginings of savages and primitive peoples led to man's more serious investigation of what seemed to be an innate idea, which awaits a final scientific solution. We are not to brush it aside be-

cause it originated in the dreams of savages, but we are justified in analysing that dream and following out its intimations till we shall learn the final truth relative to man's destiny.

CHAPTER XIII

Intimations of Physical Immortality

Thus after reviewing all the objections of a serious and scientific character against the possibility of life after death, I am forced to the conclusion that the only legitimate, unprejudiced, undogmatic and rational attitude to hold is, at least, one of tentative agnosticism. It may be, with the present state of human knowledge relative to man and the universe, Science is indeed not yet justified in asserting even tentatively the actuality or perhaps the probability of such a future existence; but within the scope of all the arguments advanced I cannot find where she is justified in absolutely denying its possibility, or postulating it as pure myth which gives no promise of scientific verification.

If I may so put it, the existing ignorance of science relative to great fundamental problems involving human life and universal evolution, would logically force it to maintain a state of cautious investigation and dignified abeyance, until these problems may have been solved. At the present stage of scientific information to make bold and unqualified declarations that the conception is a mere myth and that Nature extends no hope or promise of such an event in the future, it seems to me, is going vast lengths beyond what justifies such an attitude.

I will enumerate here a series of reasons why I

think the scientific attitude should, at least, be one of considerate agnosticism rather than one of opposition and positive denial.

(1) Science is still too ignorant concerning the nature and origin of planetary life to pronounce final judgment as to its potential continuity. But a few generations ago, for instance, the notion that even the physical life upon this planet could be made to have indefinite existence would have been scouted as the merest piffle and rejected with scorn. But we have now learned through the labors of Alexis Carel, and other eminent biologists, that the conditions of life may be so environed that indefinite existence, in short, potential human immortality on this plane, may be postulated as almost a scientific assurance. When I wrote the following sentence in my "Modern Light on Immortality" (p 448) in 1910, it was met with considerable incredulity and brushed aside as a mere rhetorical flourish: I had presented twenty-three propositions showing the bearings of science on a possible after life and then said: "it seems to me that one of two logical conclusions follow as the necessary corollary of the theses thus enumerated: First; That when mankind shall have discovered the secret laws that appertain to the art of living, to Nature's own marvellous principles of life-sustentation, we shall have overcome the mystery of death and shall continue to live and fructify in the no longer mortal bodies we now occupy."

Very soon after the publication of this work the whole world was amazed at the information of almost uncanny results that had been obtained by Dr. Carel and others which fully sustained the proposition I

had above enunciated. Although that corollary when first written in 1909 appeared to be an exaggeration or a mere figment of imagination, already concrete experiments were being prosecuted which demonstrated the verity of the deduction, namely, that physical immortality on this planet lies within the immediate possibility of the future.

It is, indeed, interesting and suggestive to note how rapidly Dr. Carel's experiments are approximating a demonstration of the possibility of persistent continuity of the physical life. He first showed that living tissues may be forced to a continuity of existence, outside the body, and now he is rapidly discovering how the connective tissue (the tissue of which the greater part of the body is composed) may be made subject to indefinite growth in spite of natural decay, and its existence indefinitely prolonged. This problem once worked out means the indefinite prolongation of the life of an organism, including the human body.

Dr. Carel declares, as the result of his discovery (thus offsetting the failures of Maupas and Calkins, and their conclusions, in this field) that "the dynamic condition of a strain of connective tissue cells, which have been living in a given medium for some time, is not a definitely acquired characteristic, but a temporary state, and is the product of a function of the medium in which the cells are living; and is readily modified merely by altering the composition of the medium." (Journal of Experimental Medicine — August, 1913.)

A writer in the N. Y. Times, Sunday, Sept. 14th,

1913, referring to Dr. Carel's achievements, says, "This scientist has not only found a way to make connective tissue live permanently and grow outside of the organism from which it was taken, but he is now able to prepare a medium in which it grows, so that he can actually regulate that growth. He can increase, decrease or halt it."

In other words, when science has completed its research in this department, we shall have learned the secret of life in an organism and the way by which indefinitely to prolong the existence of any living body at the will of the possessor.

This is an age in which the dreams of musty superstitions of the past seem to be becoming scientific realities. It is not remarkable that popular magazine writers express surprise at these results, like Millard, who exclaims, "Through his (Carel's) experiments, science may attain its age-long dream of bridging death with a chain of never-ending life;" or, like Hendrick, who declares, "He has not demonstrated that life itself can be generated chemically, but he has practically shown that immortality is merely a question of chemical reaction." (McClure's Jan. 1913.) This discovery leads us to our second deduction, namely:

(2) Science is not justified in proclaiming protoplasm, the physical basis of life — as subject to inherent decay and ultimate dissolution. Huxley's famous dictum, of 1868, "Under whatever guise it takes refuge, fungus or oak, worm or man, the living protoplasm not only dies and is resolved into its mineral and lifeless constituents, but is always dying, and

strange as the paradox may sound, could not live unless it died," is now referred to only as a mythical scientific notion of the past.

The real living substance never dies except by accident. So long as the environment permits its sustenance it continues to live, for, as has already been said in a previous chapter, the life-germ or plasm is persistent, continuous, and race-regenerating.

(3) When we consider the cell of life Science is yet too illy informed to declare that it contains no elements which may survive death. As just above set forth, before the labors of Carel, it had been concluded by Maupas and Calkins, and others, that the primitive forms of life, the one-celled animals, were subject to absolute death by a natural process of decay. But the more recent biological researches have shown the fallacy of this conclusion, and have demonstrated the potential immortality or the germplasm, or substance of which the cell is composed. (See Appendix "D.")

It is assumed by science that there is a simple, undifferentiated life-substance, even antecedent to what is popularly known as a protoplasm, which constitutes the logical basis of protoplasm and the cell formations. This is not demonstrable under the microscope but is a logical necessity in the evolution of life upon this planet. There are of course some who contend that such an alleged primary substance is mythical and has no existence. But most of the great biologists accept the hypothesis. "That the cell consists of mere elementary units" says Dr. Wilson ("On the Cell and Heredity," p. 21), "is indi-

cated by *a priori* evidence so cogent as to have driven many of the foremost leaders of biological thought into the belief that such units must exist whether or not the miscroscope reveals them to view. Among those who have accepted this conception are numbered such men as Spencer, Darwin, Beale, Haeckel, Michael, Foster, Naegeli, DeVries, Wissner, Roux, Weismann, N. Oscar Hertig, Verworn, and Whitman."

CHAPTER XIV

The Self-Perpetuation of the Life Cell

(4) While Science is still holding but a tentative attitude in reference to the beginning of the cell, and the substance from which the cell evolves and attains to its high complexity, it would not seem that it is justified in sealing it with any final limitations, as to its possible future history. It may contain a substance which in itself is capable of over-riding the shock and disintegration of the cruder substance of the mortal flesh. I do not say that it is possessed of such inherent capacity, but that science durst not declare its incapacity in this regard until it is more absolutely acquainted with all the powers and attributes of this primary hypothetical life substance. The fact that the life-cell has recently demonstrated its power to disregard the ordinary tendency of planetary decay, and continue its life here perpetually, if properly fed, as shown by Carel, would, certainly, sufficiently warrant a pause in our conclusion that the cell, when it actually dies, has exhausted all the potencies of its inherent nature. Wilson insists that "we are compelled by the most stringent evidence to admit that the ultimate basis of living matter is not a single chemical substance, but a mixture of many substances that are *self-perpetuating* without loss of their specific character." (Italics by the author.)

If these substances of the cell are self-perpetuating, in mixture with other substances, without loss of their specific characters, we do not yet seem to be justified (at least until we have discovered the absolute nature and capacity of the single ultimate substance from which all cell-force and its complex machinery is made) to declare that when the cell itself outwardly dissolves it does not leave over a residue of invisible matter that may acquire its sustenance from some invisible element and continue its existence.

In my work "Psychic Phenomena, Science and Immortality" I have attempted to show that this mysterious ultimate life-substance may be of a radio-active nature, and just as the planet itself, it is now known, is sustained by this heat-generating and vitalizing energy, so the life substance may be, and from it acquire the power of self-perpetuation of which now we can know nothing.

If this were true, then it would immediately bridge the gulf between apparent death and continuous life by a scientific fact that would easily explain the problem. As there have been so many recent surprises in scientific discovery, it would not appear fatuous to postulate the possibility that this energy does inhere in the ultimate life substance and is qualified with self-perpetuating powers, which operate in invisible realms, and may constitute the frame-work of future psychic activities.

I have elaborated this theory with a large aggregation of scientific facts, relative thereto in the work above referred to, and will not here further repeat the argument. I have merely to say that until science

is more thoroughly acquainted with the complex machinery of the cell of life, and especially with the nature and attributes of the hypothetical substance from which it must be manufactured, it is not justified in making any final announcement concerning a possible future existence, for which the secret substance of the cell may afford a potential foundation.

CHAPTER XV

Vitalism and Biotic Energy

(5) The camps of science are as yet all too divided on the problem of Vitalism, for the justification of any absolute declaration of the impossibility of continuity of vital energy in another form of matter after death. Such biologists as Lankester, Haeckel, practically the whole German School, in fact, Bastian and many others are outspoken in their declaration that Vitalism as a principle in Nature has no existence, save as a phase of transmuted physical energy. But it is known that recently there has been a great reaction from the views of these investigators toward the older conception of Vitalism.

Bateson, for instance, ("Heredity", Smithsonian Rept. 1910) says:

"Of the physics and chemistry of life we know nothing. Somehow the characters of living things are bound up in properties of colloids, and are largely determined by the chemical powers of enzymes, but the study of this class of matter has just begun. Living things are found by experiment to have powers undreamt of, and who knows what is behind?"

While thus ignorant of the most transforming and puzzling of all natural forces how absurd to make any final declaration as to its possibilities or future development!

At one time the scientists were glibly asserting that the ascent from the lowest forms of life to the

highest was no less discernible than the ascent from inert forms of matter to the germinal departure of living organisms. But now science is getting far more cautious in considering these problems. "On the whole I think it is very manifest that there is abroad on all sides a greater spirit of hesitation and caution than of old," says Prof. D'Arcy W. Thompson (Chairman of Natural History, Univ. of St. Andrews, Dundee, Scot.) in his Presidential address before the British Ass'n for the Advancement of Science, reported in Smithsonian Annual of 1911. He continues to remark, that "the gulf between the lowest forms of life and the inorganic world is as wide, if not wider, than it seemed a couple of generations ago." There is indeed, a strong reaction, even in the German School, for Driesch, who was at one time an outspoken anti-vitalist, as the result of more thorough and recent research, has completely altered his former attitude and is now a foremost vitalist. To show how marked the reaction is I quote from "Age, Growth and Death" (Dr. Minot) who says: "A Vital Force is the only reasonable hypothesis. . . . So little has been gained since 1879 (in which year his work was first published) to 1909 . . . . in our comprehension of the basic phenomena of living things that were I to re-write the treatise I should not change it materially. The vitalistic hypothesis still seems to me scientifically the best."[1]

[1]On this much mooted problem Moore in his very recent "The Origin of Nature and Life", (Holt's Home Univ. Lib.) says pointedly:

"Some term is obviously required applicable to the entirely peculiar set of energy phenomena witnessed in lving matter, such as biotic energy. Heat energy and electrical energy are mutually

Whether or not we approve of this reaction, and these vitalistic theories, the point I am making is that so long as the scientific camps are divided and a scientific consensus cannot be acquired on this great issue it is not becoming or sagacious in scientific leaders to insist on a final and conclusive declaration concerning the ultimate tendency of a natural force of which at present they stand in such ignorance.

While the nature and possibilities of this force are still undetermined, and the possible development of its energy even in physical manifestations on this planet cannot yet be foreseen or comprehended, it would seem that we must await a time when more complete knowledge has been acquired before we decide absolutely, whether or no this force has the power to carry on its activity in an invisible region, after it has departed the limitations of the fleshly organism.

transmutable one into the other, yet it is not said that electrical energy is heat or light because these appear when it is transformed. Why, then, should a form of energy such as inhabits living structures be thought to be only a mixture of heat and electricity and chemical energy, because these are observed when it manifests itself! The position which denies the existence of a form of energy characteristic of life is one of peculiar absurdity even for the pure mechanician, which can only be explained as a natural reaction from the entirely different mediaeval conception of a vital force which worked impossible miracles. As well because of the errors connected with the idea of 'phlogiston' might the present ideas regarding 'energy' as a whole be scouted." (225; 226.)

CHAPTER XVI

Consciousness and Brain Action

(6) We must realize that so long as the phenomenon of self-consciousness in human beings presents insoluble problems to scientific study, we should be modest in our decision as to the possible future history of such an attribute. No one is able yet to decide the actual origin and nature of consciousness.

Some argue it is an incidental condition accompanying certain nervous activities, an epi-phenomenon — or that it is a function of the brain, resulting from the action of the reflex arc system of the nerves and ganglia.

Says Prof. Elliot: "Modern researches into the physiology of the nervous system indicate that the reflex arc is the functional unit of the system, and indeed, that the system has been built up in the course of evolution by the multiplication of reflex arcs and their superimposition one upon the other to a degree of almost infinite number and complexity. . . . A stimulus at one end of the arc is conveyed down an 'afferent' nerve to the central ganglion, whence proceeds a further impulse along on 'efferent' nerve to, say, a muscle, which thereupon undergoes a contraction. . . . Given this reflex arc preparation in a fit functional condition, the effect is bound to follow the cause, and the whole process works with the same inevitable certainty as the law of gravitation."

This sounds very simple and convincing. Yet when we contemplate the state of feeling which accompanies these reflex-arc-conditions and functions, we naturally

ask how are the reflexes transformed from mere physical impulses into mental states of consciousness? It is undoubtedly true, as Elliot says, "It is not the will that stimulates the nerves. They are stimulated by the nerve processes within the brain and with these processes the spiritual will has no more to do than an inert and accompanying shadow."

That, as I say, may indeed be true. But what we must account for is what the professor calls "the spiritual will." That is the state of consciousness which we call volition and which we cannot discern as a mere physical function. Again it may be true, as he says, that "it is found by actual experiment that the quantity of energy emanating from the organisms is precisely equal to that absorbed into the organism, mainly in the form of chemical energy in the food."

But the problem that science must still solve is how this energy of food, or chemical combustion, is transmuted into the feeling or state of mind known as consciousness. We can readily understand how the food taken into the system releases by combustion the energy it contains and that that energy is used up in the muscular action of the body. But that merely accounts for the physical transmutation of energy.

We can understand how the food releases heat in the body and thus sustains its vitality. *But do we understand how the physical motion known as heat is transmuted into the mental sensation recognized as heat?* Do we understand how the amount of food we take into our systems is transmuted into the thoughts which emanate from our brains?

We can readily understand how the energy of the

consumed food may assist the function of the reflex arcs and thus suffer the physical functions of the body to be performed; but do we understand how this same food-energy becomes the consciousness of will or choice, whereby we solve the great problems of existence and conquer obstacles? Professor John Fiske has well said:

"If we could trace in detail the metamorphosis of motion within the body from the sense organs of the brain and thence onward to the muscular system, it would be somewhat as follows: the inward motion carrying the message into the brain would perish in connection with the vibration which accompanies the conscious state, and this vibration, in turn, would perish in giving place to the outward motion carrying the message out to the muscles. If we had the means of measurement we could prove the equivalence step by step."

Thus far, Fiske is in exact accord with Elliot who says, "the transaction is similar to the conditions existing when a large number of billiard balls are arranged in a straight line a few inches from each other. Propelling the balls from one end of the line against the centre of the next ball, the end ball gives up its entire motion to the second ball: the end ball comes to an entire stop, while the second ball carries the action on to the third ball. In this way the original impulse travels right down the line; each ball in turn takes up the motion from the one behind, and passes it on to the one in front immediately coming to rest itself."

So far these two professors exactly agree in the description of the nervous process and function. But now Prof. Fiske goes on to say: "But where would the conscious state — the thought, the feeling come in the circuit. Why, nowhere! The physical circuit of motions is complete in itself.... Conscious life forms

no part of the closed circuit but stands entirely outside it."

It would appear that until this difficult problem is solved, until science really determines what consciousness — thought, sensation, volition, — really is, not by merely describing the functional process of the apparatus through which it works, but its own nature and possibilities, we are yet far from determining its future history on this plane or its possible functioning in another plane.

It is quite probable that we shall find the apparatus is not as simple as it appears to be from the present descriptions of physiology. We are but looking at the outward machinery of the apparatus, but, what the real force is which moves the machinery, is yet to be discovered.

We must discover what the actual form of energy is which actuates thought and consciousness, and when we shall have discovered this form of energy, it must then be learned whether it has such force that it can continue its functioning after the brain's dissolution. It is quite possible, if not probable, that the energy which is exercised in will and consciousness is that now known as radio-activity; that is, the action of the will- or consciousness-force, may be electric, or expressed in the activity and relations of the primal electrons. These as already explained are not really matter, as we ordinarily understand it; but a much more refined and persistent substance.

"If matter is made up of an assemblage of electrons," says Jean Becquerel, "its inertia is entirely electro-magnetic. . . . I do not wish to go so far as to

say that there is no such thing as matter; this merely signifies that it is not well to depend entirely on appearances and that it is necessary to view matter in a different light from which it has been viewed in the last few years." (Smithsonian Rep., 1911.)

CHAPTER XVII

Mind and the Electro-Magnetic World

(7) In my "Psychic Phenomena, Science and Immortality," I attempted to show that in all probability the function of consciousness and thought was exercised in the plane of electro-magnetic energy — where "an immaterial emanation of a radiant nature flows ceaselessly around the cell centres of the brain, and which is the immediate instrumentality of the energy of the will. It is the substantial garment of sentiency, volition and consciousness. In short, the will-energy, which is the central force of personality, or self-consciousness, is itself radiant substance; that is pure, immaterial emanation, radio-active, electrical and all penetrating."

I may be wholly wrong in such a conclusion, which I felt called on to make from the physical analysis of the substance of the brain cells and the pure plasm of the vital substance. But until we know whether consciousness is of some such nature we cannot possibly understand its potential future history.

At least the present state of the scientific knowledge of matter is not such as to warrant any absolute assertion concerning its ultimate nature and the possibilities that appertain to its further evolution. Matter is now reduced to invisibility and immateriality, to a substance whose properties are directly contra-

dictory of the well known and historic attributes of matter. Matter is indeed reduced to a mere charge of electricity, whose unimagined possibilities are just beginning to reveal themselves to the apprehension of man.

There is a realm of matter of whose conscious experience we are no more capable than is the fish capable of the experience of the air; though, contrary to the fish that dies if exposed to air and is deprived of its native element, the water, mankind is unconsciously enswathed with a substance in which he thrives, yet of which he has no perception.

It is a probability that the whole realm of the psychic activities exists in an element, howbeit substantial yet immaterial, of electro-magnetic nature, whose properties are almost wholly inappreciable by the customary senses. "Until it is possible," says Soddy, "to educate the mind so that it apprehends intuitively the three dimensional aspects of motion in ether, *the electro-magnetic world,* which underlies the material world, and *may completely embrace it,* must remain a *foreign element* as difficult to breathe as air is to a fish, by those accustomed to the *grosser ideas of matter and its motion.*" (Italic type by the author.) ("Matter and Energy," Home Univ. Lib. edition, p. 182.)

In short there is a whole new world of existence for us to become acquainted with and conscious of, which actually embraces us, yet concerning which we shall have to be educated as a baby is educated in becoming acquainted with this palpable world. And this un-

known, unsuspected, inappreciable and imperceptible world, is the *actual* — the realm of truth and reality.

It is not metaphysics which is thus speaking, but rigid science. What the final possibilities of this ultimate essence of matter may be no one yet knows. As undoubtedly the ultimate quality of living matter must be of the super-material above indicated, it is futile for us to postulate its final destiny, for we know as yet so little about it. It seems to be immaterial and indestructible; in that event, as I have shown in my "Psychic Phenomena and Immortality," it may be susceptible of carrying forward the psychic activities of the brain beyond the grave, because it is the distinctive element in which those activities are exercised in the brain at present.

Even mechanistic or materialistic philosophers, at least of recent date, admit that the energy of thought is not like ordinary motion, but embodies some kind of electrical change. Says Prof. Hugh Elliot as reported in Science Progress and reprinted in Truth Seeker of May 1st 1915, "In the nervous impulse, *something* is passed from molecule to molecule. That something, which is not motion, indeed; it appears to be some kind of *electromotive change;* but whatever it is, the molecule or other unit of the nerve-substance passes it on, and then immediately reverts to its former quiescence."

He is here speaking of the nature of thought and its process through the nerves and the brain centres. Evidently there is some electric element in which the energy of thought acts, generating a process that is more refined and abstruse than motion in gross mat-

ter. Who shall say then what the final possibilities of such an energy may be, insomuch as we are as yet so meagerly informed as to its real nature?

Science has therefore been compelled to reject the crude yet once popular notion that thought is a secretion of the brain cells, and now admits that it is an energy accompanying the cell activity, yet exercised in an element foreign to the substance of the cell itself. Thought, apparently, is an electro-magnetic impulse — it is accompanied by an electric charge, "an electromotive change," which leaps from cell to cell or molecule to molecule, like the motion that leaps from billiard balls when set in a row, and struck by the cue.

So that while thought may be accepted as a physical process, nevertheless it functions in a substance, so utterly different to ordinary matter that it occupies a world of its own. Before science can finally determine the destiny and future disposition of the thoughts that activate the human brain, she must learn whether this action is embodied in the refined electrical substance, and whether it passes thus embodied from the brain and continues to exist as an entity or embodiment when free from the physical organ of thought. Until this problem is solved, science cannot finally determine the possibility of a future life that may flow from a self-conscious life here.

CHAPTER XVIII

Psychic Phenomena and Subtle Forms of Energy

(8) The fact just mentioned introduces for our consideration the remarkable feats of the mind as exhibited in modern psychological experiments as well as spontaneously manifested in human experience. What is now popularly known as hypnotism, telepathy, thought transmission, etc., must be explained and better understood, before their final bearing on the problem of immortality can be determined. If it should prove to be true, as it appears to be, that thought and consciousness are exercised in the electromagnetic plane of force (a plane of which as Soddy says we are at present almost wholly unconscious in our experience) we cannot determine what finally becomes of the thought-forms, that make up our states of consciousness, which is the central principle of human personality.

To illustrate this statement I will at this juncture interrupt the argument by introducing some of the phenomena to which I refer. The cases given below are such only as have been carefully verified by the scientific investigators associated with the British Society for Psychical Research. None among them was more critical, captious or skeptical than Frank Podmore, and the cases I here present are such as he himself personally verified, or had verified by reliable stu-

dents. The first case shows how thought travels from mind to mind in the form of a picture or photograph.

"The narrator is a friend of my own, who had read accounts of similar successful experiments published in *Phantasms of the Living*. The letter, from which the following extract is taken, is dated 16th November, 1886.

From the Rev. Clarence Godfrey:

" 'I was so impressed by the account on p. 105 that I determined to put the matter to an experiment.

'Retiring at 10:45 (on the 15th November, 1886), I determined to appear, if possible, to a friend, and accordingly I set myself to work with all the volitional and determinative energy which I possess, to stand at the foot of her bed. I need not say that I never dropped the slightest hint beforehand as to my intention, such as could mar the experiment, nor had I mentioned the subject to her. As the 'agent' I may describe my own experiences.

'Undoubtedly the imaginative faculty was brought extensively into play, as well as the volitional, for I endeavoured to *translate myself*, spiritually, into her room, and to attract her attention, as it were, while standing there. My effort was sustained for perhaps eight minutes, after which I felt tired, and was soon asleep.

'The next thing I was conscious of was meeting the lady next morning (i. e., in a dream, I suppose?) and asking her at once if she had seen me last night. The reply came, 'Yes.' 'How?' I inquired. Then in words strangely clear and low, like a well audible whisper, came the answer, 'I was sitting beside you.' These words, so clear, awoke me instantly, and I felt I must have been dreaming; but on reflection I remembered what I had been 'willing' before I fell asleep, and it struck me, 'This must be a *reflex* action from the percipient.' My watch showed 3:40 A. M.

The following is what I wrote immediately in pencil, standing in my night-dress: 'As I reflected upon those clear words, they struck me as being quite *intuitive*, I mean *subjective*, and to have proceeded *from within, as my own conviction*, rather than a communication from any one else. And yet I can't remember her face at all, as one can after a vivid dream!'

'But the words were uttered in a clear, quick tone, which was most remarkable, and awoke me at once.

'My friend, in the note with which she sent me the enclosed account of *her own* experience, says: 'I remember the man put all the lamps out soon after I came upstairs, and that is only done about a quarter to four.' ''

"Mr. Godfrey received from the percipient on the 16th November an account of her side of the experience, and at his request she wrote as follows:

" 'Yesterday — viz., the morning of November 16th, 1886 — about half-past three o'clock, I woke up with a start and an idea that some one had come into the room. I heard a curious sound, but fancied it might be the birds in the ivy outside. Next I experienced a strange restless longing to leave the room and go downstairs. This feeling became so overpowering that at last I rose and lit a candle, and went down, thinking if I could get some soda water it might have a quieting effect. On returning to my room I saw Mr. Godfrey standing under the large window on the staircase. He was dressed in his usual style, and with an expression on his face that I have noticed when he has been looking very earnestly at anything. He stood there, and I held up the candle and gazed at him for three or four seconds in utter amazement, and then, as I passed up the staircase, he disap-

peared. The impression left on my mind was so vivid that I fully intended waking a friend who occupied the same room as myself, but remembering that I should only be laughed at as romantic and imaginative, refrained from doing so.

'I was not frightened at the appearance of Mr. Godfrey, but felt much excited, and could not sleep afterwards.' "

"On the 21st of the same month I heard a full account of the incident given above from Mr. Godfrey, and on the day following from Mrs. ———. Mrs. ——— told me that the figure appeared quite distinct and lifelike at first, though she could not remember to have noticed more than the upper part of the body. As she looked, it grew more and more shadowy, and finally faded away. Mrs. ———, it should be added, told me that she had previously seen two phantasmal figures representing a parent whom she had recently lost." (Podmore's "Studies in Psychical Research," pp. 249-251.)

The above case illustrates how by conscious effort a thought form may be projected from one mind to another. But here follows a case of spontaneous projection of which there is no conscious projector, and the whole experience is purely subjective. Podmore, introducing the subject, says:

"We may now pass to the consideration of spontaneous telepathic hallucinations. In the first case to be quoted it is difficult to know whether to class the percipient's vision as an illusion or a hallucination. At any rate, it seems to have been exceptional if not actually unique in his experience.

From Prince Victor Duleep Singh.

"Highclere Castle," Newbury, Nov. 8, 1894

" 'On Saturday, October 21, 1893, I was in Berlin with Lord Carnarvon. We went to a theatre together and returned before midnight. I went to bed, leaving, as I always do, a bright light in the room (electric light). As I lay in bed I found myself looking at an oleograph which hung on the wall opposite my bed. I saw distinctly the face of my father, the Maharajah Duleep Singh, looking at me, as it were out of this picture; not like a portrait of him, but his real head. The head about filled the picture frame. I continued looking and still saw my father looking at me with an intent expression. Though not in the least alarmed, I was so puzzled that I got out of bed to see what the picture really was. It was an oleograph commonplace picture of a girl holding a rose and leaning out of a balcony, an arch forming a background. The girl's face was quite small, whereas my father's head was the size of life and filled the frame.

'I was in no special anxiety about my father at the time, and had for some years known him to be seriously out of health; but there had been no news to alarm me about him.

'Next morning (Sunday) I told the incident to Lord Carnarvon.

'That evening (Sunday), late, on returning home, Lord Carnarvon brought two telegrams into my room and handed them to me. I said at once, 'My father is dead.' That was the fact. He had had an apoplectic seizure on the Saturday evening at about nine o'clock, from which he never recovered, but continued unconscious and died on the Sunday, early in the afternoon. My father had often said to me that if I was not with him when he died he would try and come to me.

'I am not subject to hallucinations, and have only once had any similar experience, when, as a

schoolboy, I fancied I saw the figure of a dead schoolboy who died in the room which I slept in with my brother; but I attached no importance to this.

Victor Duleep Singh.' ''

Podmore continues:

"In the next case we seem to have one of those completely externalised apparitions which cheat the senses by a lifelike counterfeit of the human figure. The percipient's own account of the vision, it will be seen, is corroborated by an entry in a diary made within 24 hours of the occurrence. That the entry was not made until the fact of the death was known is of course to be regretted, but it can hardly be contended that this circumstance detracts materially from its evidential value.

From Miss Berta Hurly.

"Waterbeach Vicarage," Cambridge, Feb., 1890

" 'In the spring and summer of 1886 I often visited a poor woman called Evans, who lived in our parish, Caynham. She was very ill with a painful disease, and it was, as she said, a great pleasure when I went to see her; and I frequently sat with her and read to her. Towards the middle of October she was evidently growing weaker, but there seemed no immediate danger. I had not called on her for several days, and one evening I was standing in the dining-room after dinner with the rest of the family, when I saw the figure of a woman dressed like Mrs. Evans, in large apron and muslin cap, pass across the room from one door to the other, where she disappeared. I said, 'Who is that?' My mother said, 'What do you mean?' and I said, 'That woman who has just come in and walked over to the other door.' They all

laughed at me, and said I was dreaming, but I felt sure it was Mrs. Evans, and next morning we heard she was dead.

Berta Hurly.' ''

Miss Hurly's mother writes:

'' 'On referring to my diary for the month of October, 1886, I find the following entry: '19th. Berta startled us all after dinner, about 8.30 last evening, by saying she saw the figure of a woman pass across the dining-room, and that it was Mrs. Evans. This morning we heard the poor woman is dead.' On inquiring at the cottage we found she had become wandering in her mind, and at times unconscious, about the time she appeared to Berta, and died towards morning.

Annie Ross.' ''

''February 25, 1890.'' (Idem pp. 252-255.)

This was the projection of a thought image or form from the expired mind of a deceased person. In both cases naturally the transmission of thought occurred within a plane of matter of which we are at present wholly ignorant, yet undoubtedly it is not so mysterious as to be undiscoverable and not to be finally apprehended by the human understanding.

It is commonly argued that whatever hypnotism and telepathy, or apparitions and hallucinations may be, they are activities of some form of matter, they are material forces, and being such they are subject to the common laws of matter, which prophesy ultimate decay and death. For the moment, disregarding the scientific certainty that even matter itself knows nothing of ultimate and complete death, yet is it not true that, even though telepathy be the expression of a material force, it may be functioning in a plane

that is beyond the conscious experience of the present capacity of man? If these phenomena are functional manifestations of the electro-magnetic plane of matter, as has been said, it is a plane of which as yet we can have no conscious experience, any more than a fish can have of air; how then can we postulate anything as to the final fate or destiny of activities that operate in such a plane?

Just as we have discovered that radio-active energy reveals in Nature forces and possibilities which are absolutely contradictory of all the commonly recognized properties of matter, so we discovered in the psychological realm that the forces exercised or exhibited in thought transmission and hypnotism, are possessed of attributes exactly contradictory of those with which we associate ordinary mental activity.

In chemistry and physics investigators and scientific philosophers have been compelled totally to revise and restate even fundamental principles, because of the discovery of radium and radio-activity in Nature (some going so far as to assert all the books written on physics, thermo-dynamics and chemistry must be destroyed and new text books written); and, likewise in psychology and mental philosophy recent discoveries of unexpected powers of the human mind have compelled a complete re-statement of the possibilities of human nature and conduct.

The outcome of the new discovery in physics has been the practical declaration of the immortality of matter, both inert and living matter, not as we sensibly know it, but as electrical or electro-magnetic, originating in the free unit of electricity—the elec-

tron, whose miraculous powers and possibilities man is just beginning to recognize.

Not only has it compelled the recognition of the immortality of the primary substance of matter, but even of the universe and solar system as well. The process of the Cosmos, as has already been said, is one of cyclic births, deaths and resurrections. In the work of Soddy to which I have referred he declares:

"Until this modern discovery physicists and astronomers were forced to the conclusion that the earth and solar system were in process of final conflagration, but now, we are compelled to think that a constructive influence is at work opposing this process, and the whole system may turn out to be a constructive one, limited with respect neither to the future nor to the past, but proceeding through continuous cycles of evolution."

In short what we have heretofore construed as an essential and absolute attribute of all forms of matter, namely dissolution and ultimate death, is now denied as a fact in Nature and what is everywhere discerned is the perpetual energy of life and resurrection. Death, indeed, as well as dissolution, there is; but they are merely the passing of the outward form or phenomena, whereas the substance, the ultimate units of which they are composed, these are eternal, indestructible, immortal. But not even the forms themselves can be said to be destroyed for, while the individual units of which the forms are composed do indeed dissolve and disappear, the forms or matrixes in which they manifest themselves continue perpetual and unmodified.

Is it not so, too, in the psychological world? Have

we not here, too, discovered a totally new plane of functioning, the electro-magnetic, as in objective matter we have discovered the radio-active. And as this electro-magnetic plane of mind is really also radio-active in its functional attributes, that is, exhibiting thought and consciousness as attributes of radio-active energy, how dare we at present assert anything final and absolute as to the possible continuity and perpetuation of the personalities which consist of these forces.

We find similar contradictions of ordinary experience in the two planes which we are considering, the radio-active and the electro-magnetic. In the former matter, which is ordinarily opaque, becomes transparent; that is, radio-active rays penetrate matter and permit the human eye to follow the new light. With the X ray any object can be seen through an opaque surface.

So in the electro-magnetic plane the common eye can see through matter, and enjoys a vision that is utterly unknown to ordinary experience. Space and time as we commonly experience them are actually abolished in the experience of these two planes of Nature. The radio-active energy is of such velocity, some of its rays almost equalling the velocity of light, that could consciousness pursue it, space would be annihilated. Likewise in the hypnotic and telepathic experience now discovered to be human possibilities, space is utterly disregarded and time forgotten. Many other similar characteristics are discerned, showing that the natural laws which prevail in the two planes are identical.

This would seem to indicate that as we have been compelled to revise our understanding of the fundamental principles in one plane we shall also be compelled to do so concerning the other. And, as in the realm of psychology it is now probably discovered that the very substance in which thought and consciousness are exercised lies in the electro-magnetic and the radio-active plane, the deduction seems at least justified, when we say that as yet we know of no laws in Nature that would destroy the possibility of these mental functions, or human personality, continuing to function after the outward or visible form of matter in which they heretofore expressed themselves has been dissolved. At least it would seem that science is not at present justified in denying the possibility; and a decidedly qualifying reason is that we do not really yet know what death, even of the forms of organic and inorganic matter, is. We are as yet totally ignorant of the nature not only of life but of death. We do not know when life begins or ends, when death begins and life ends.

CHAPTER XIX

The Mystery of Death

(9) DEATH! How can we know it when we have never experienced it? We have indeed observed it; but never known it. Death is not an immediate but a slow process, the entire body not dying at once, but only cell by cell.

If a tree is felled we think we have killed it; yet it may live for many months and even bear fruit (the life still expressing itself) another season.

When an animal organism is killed the same experience follows. A chicken will run with its head off, showing some life still inheres in the remnant of the body that is left. A human being may be paralysed in almost vital parts of the body and still show some life; and of course we know of many cases where death is supposed to have set in where an error caused the body to be buried while still alive. The brain cells—the cells of consciousness—seem to be the last that die in a human organism.

But at what moment death actually is complete—even when the entire body is outwardly dead, no one seems to know. Says Sir Benjamin Ward Richardson, in "The Ministry of Health" (p. 154-5)[1] "We are at this moment ignorant of the time when vitality ceases to act upon matter that has been vitalized. Presuming that an organism can be arrested in its living in such

[1] See also "Death: Its Causes and Phenomena," by Carrington and Meader.

manner that its parts shall not be injured to the extent of actual destruction of tissue, or change of organic form, the vital wave seems ever ready to pour into the body again so soon as the conditions for its action are re-established. Then in some of my experiments for suspending the conditions essential for the visible manifestation of life in cold blooded animals, I have succeeded in re-establishing the condition under which the vital vibrations will influence, after a lapse not of hours, but of days; and for my part I know of no limitation to such re-manifestations except from simple ignorance of us who inquire into the subject."

In the successful experiments of Dr. Carel we have even the greater exhibition of the continuity of life after the dismemberment of the individual vital parts of a living body. The different vital organs of a cat were actually separated from the body and yet they continued to live and function; the cat as a cat was as dead as it could be; for the form and organic unity of it were utterly destroyed, yet the really vital parts of the cat continued to live and act as though they were still functioning co-ordinately within the cat's organism. In this case it would indeed be difficult to tell when the cat enters into the process of organic death. When such puzzling problems are presenting themselves to the genius of modern biologists it seems indeed unreasonable to become dogmatic in a field of truth where as yet so little is known.

(10) How can we possibly be positive or assured concerning the issues of an event, whose occurrence leads we cannot say where? Who can possibly tell

what transpires in the moment of death; what psychological, biological, chemical or other transformations take place, who shall say?

Knowing so little about it how can we rationally declare anything final concerning its future? "But Death?" exclaims Prof. Joseph Le Conte, "Can we detect anything returned to the forces of Nature by simple death? What is the difference in Nature between the living organism and the dead organism? What is the nature of the difference expressed in the formulae of material science? What is it that has gone, and what has not gone? There is something here which science cannot understand."

Had Dr. Le Conte said there is something here which science cannot *yet* understand he would have told the truth in his day; but that science shall some day understand it, all who have faith in man's infinite patience and research must believe.

In fact recent discoveries have permitted us to believe that we may now be on the trail of what has gone and not gone; and we may find the remnant in the plane of the radio-active element which is already revealing such undreamed of possibilities to the eye of science in the phenomena of Nature, and may prove to be the very secret relative to both life and death which has so long sustained the defiance of mystery.

If, for instance, as I shall attempt to show, in the following section of this work, it should be demonstrated that most refined emanations or gasses have been emitted from material substances in solution, and those emanations, when existing in the free ether

and coming in contact with other elements, construct for themselves, so to speak, new bodies, howbeit invisible, in which they continue to live and thrive for days, and weeks and months, and even years, would it not afford, at least, a suggestion of the possibilities of what might take place in the electro-magnetic or radio-active element that may escape from the human body in the process of death, and permit it to function in another plane of existence?

If radium in solution actually can give forth such a marvellous emanation which is capable of performing such dramatic contradictions of the entire history of what is known as matter, why should we conceive it to be beyond possibility that the ultimate vital substance, which enters into the mysterious formation of a living organism, may be endued with equally marvellous and transforming powers as the emanation of radium.

In the latter case of course the suggestive difference would be that whatever element it may be that remains after the death of the human body it would be surcharged with the intelligence of the human brain, whereas the emanation of radium would be merely inert and undirected by personal consciousness. Of course I am not advancing this opinion as a proof of the existence of the after life of man. I am simply asserting that so long as such a possibility is suggested by an analogous fact in Nature the event itself is not beyond reason and therefore cannot be absolutely denied as a possibility by rational science.

So long as such ignorance concerning the reality of life and death still exists science must at least

maintain a silent dignity and await further discovery. So long as it is true, as Prof. Bateson said in his address before the British Ass'n for the Advancement of Science, that "Of the physics and chemistry of life we know next to nothing," it is well that science remain cautious and undogmatic. "Somehow" he says, "the characters of living things are bound up in properties of colloids, and are largely determined by the chemical powers of the enzymes, but the study of this class of matter has only just begun. Living things are found by experiment to have powers undreamt of, and who knows what is behind them?" (On "Heredity.")

Now, I am not insisting that because of this ignorance science must assume that ignorance will continue and therefore the teleogical attitude of theology should be accepted as the best and noblest state of mind. I am merely insisting that in the present state of scientific ignorance concerning such potent fundamental principles and possibilities the hour has not yet arrived when science can justly make a positive denial of the nature of potential life after the death of the human body.

BOOK II

Scientific Limitations of Reason

CHAPTER XX

Summary and Investigation of Scientific Negations

Having now compassed a considerable ground in our survey of the negative attitude of science toward the problem of immortality, let us recapitulate and review the arguments, setting them forth in numerical order.

(1) It is necessary that we distinguish carefully between the scientific attitude and the attitude of "faith." By the one method we arrive at general principles deduced from a summary of facts; by the other we accept general principles, as axiomatic or proposed, and seek facts to establish or corroborate them.

Mere axiomatic assumption of what is unsusceptible of demonstration is not scientific; and the assumption of what is to be proved must be only tentatively held as an hypothesis to be rejected at once when found fallacious.

In scientific research there is but one standard by which to judge facts and principles; that standard is a sincere desire for the truth, regardless of predilection or tradition. There is danger both in science and in philosophy that we be misled by traditional disposition or predilection in favor of a desired hypothesis.

(2) The mere disproof of an alleged principle or

doctrine assumed to be true, is not in itself a disproof of an actual fact that may exist although for the time being undiscovered.

When Columbus sought a western route to India, although sophists and scholastics may have actually proved by mathematical and geographical demonstration that his theory was utterly false, that, however successful as an abstract, demonstrated proposition, would not disprove the actual fact of such a western passage. So is it with the problem of immortality.

We must not conclude that science has disproved the potential fact of immortality because it has successfully overthrown and disproved many doctrines, theories and propositions of faith relating to it.

If all these had been shown to be false or fallacious, that accomplishment in itself would not actually prove that existence after death is not a fact in Nature. In this section we considered only the question whether science has disproved the *fact*, not merely some theory or a doctrine relating to the potential fact.

(3) Proving that whatever the soul may be it cannot have other than a physical nature does not in itself establish the impossibility of its after existence.

Accepting even Haeckel's definition that the soul is not an independent, immaterial substance, but merely the collective title of the sum-total of man's psychic capacities, does not demonstrate the impossibility of the continuity of the existence of such

capacities after death; for the reason that it is demonstrable that Nature actually thinks, or conducts a rational series of processes in her phenomena, and that the brain of man is itself a temporary and adaptable instrumentality for the thinking process of Nature to express itself through.

The soul may indeed be physical and material, yet it may consist of such refined material substance, as to possess attributes utterly contradictory of the property of gross or ordinary matter.

An analysis of universal matter does actually disclose the fact that the primary units of which manifest matter is composed are, indeed, immaterial in the sense that is ordinarily understood. For the substance exists in a plane where ordinary matter cannot possibly function.

Science is now forced to speak of immaterial, imponderable, invisible and insubstantial matter—a contradictory expression, apparently, at least paradoxical, yet which the recent discoveries in laboratory experiment actually compel.

Therefore Haeckel is correct in asserting that the soul is not immaterial and independent, if he uses these terms in the ordinary sense; but if he uses them in the sense in which physicists now speak of the ultimate units of matter he would be wrong.

Interpreted in that view the substance in which the psychic faculties functionate may really be immaterial, invisible, independent and insubstantial. In fact science can as yet speak with no very clear language in her description of this form of matter, for

the discovery is so recent and so startling that a new nomenclature is called for.[1]

(4) As we are forced to reinterpret our understanding of ultimate or refined matter, so we are forced to reinterpret the nature of thought and the agency through which it acts.

When the luminiferous waves of ether were discovered to enable scientists to explain the nature of light it created not only a sensation but a new science. So the recent discovery that thought energy is not a mysterious, occult and supernatural process in the human brain, an expression of vague and incomprehensible spirit, but is like all other expressions of energy in Nature a mode of motion (or etheric waves that correlate with the functions of mind) has compelled a new psychology and a new interpretation of life.

That thought is a mode of motion is demonstrated (a) by the nature and organization of the nervous system and the cranial cells, which are so made as to

[1] "When we leave the realm of matter and attempt to penetrate into that of electricity and the ether, the highest intellect feels the need of models and the impossibility of obtaining even the raw unfinished material out of which to construct them. It is as if we were in a world destitute of simple wood and brass and nails, but elaborate, furnished with all sorts of extremely complicated constructions which baffle our ingenuity to pull to pieces. Our most fundamental conceptions are like ourselves, material. The elaboration of them is easy, but their simplification to suit the immaterial world, whither we now wish to embark, is difficult almost to impossibility. If our minds habitually thought in terms of electricity and magnetism, instead of terms of matter and motion, what a world would be opened!" (Soddy's "Matter and Energy," Home Library ed. p. 164-5.) (Boldface type by the author.)

Again: "Is the unexplained inertia of matter a different thing from the elucidated inertia of electricity, or is it possible that the inertia of matter is due to the same phenomena as that of electricity, and that matter is in some unknown way compounded out of electrons?" (Idem p. 177.) (Boldface type by the author.)

make them susceptible not to the transference of anything material (like blood which is conveyed in the veins) but only to the carrying of vibrations which pass into and out from the nervous organism in order to bring man in contact with the other world.

Again (b) thought has been shown, in all probability, to be incorporated in a process of nerve or brain waves by the alleged fact of the photography of the process. While thought photography cannot yet be accepted as a demonstrated scientific fact, nevertheless there have been certain tentatively successful efforts which would seem to demonstrate the possibility as worthy of continued experiment and study.

The most respectable recognition which thought photography has yet received in scientific circles is the results of Commandant Darget's efforts which have received the seal of the Academy of Science in France as genuine and truthful.

If thought is incorporated in a process of wave-motion, then it must operate in a form of substance that is at least as refined as are the ether waves of light. The bearing of this fact on the possibility of after life is so important that until the problem is solved science cannot safely asseverate anything positive relative to future existence.

(5) For if it be true that thought and the psychic activities functionate in an imponderable, insubstantial, immaterial and permanent element, then it must be learned whether the customary thoughts, that is the self-consciousness of the individual, can so impress

this potential substance as to perpetuate its organized existence beyond the grave.

If the consciousness of man abides in this substance, whose properties are utterly contradictory of the properties of gross matter, then just as the mental forces can in dreams temporarily create extemporized personalities, may not the same powers have the capacity of maintaining genuine personalities after death of the gross body?

If consciousness or organized personality is a force, and impresses its purposes and volitions upon the element which we are contemplating, and if it shapes that element within the present organism by reason of its negative force, then may it not be possible that this same consciousness may have the power of continuing so to hold together the sufficient units of this ultimate substance as to maintain a matrix for the manifestation of itself in another sphere? I do not here argue that it is so. I merely contend that as we are confronted by the marvellous substance of which as yet we know so little, and as we are learning that this substance is the immediate residence of the psychic faculties, or as called by some the soul—then science is as yet in no position to declare the positive impossibility of its after existence.

On the contrary judged by the possibilities of consciousness operating on a plastic, invisible, unweighable, and permanent substance, the probability of after existence, precisely because of the existence of a substance that would be an accommodating medium for such psychic state, seems to be emphasized.

(6) It is argued that because a personal soul has a beginning in time it cannot therefore have a perpetual existence hereafter. The supposition is based on the theory that whatever begins in time must also end in time. This is true according to ordinary observation. But while we see that things which have a beginning before our eyes seem also to reach an ending; we learn on more careful consideration that the law is not true as stated, for there are beginnings without endings.

(a) The motion of any object while at rest begins by the application of an external impulse, yet the perpetual continuity of that motion is a recognized fact in natural philosophy, although the resultant excitants of the motion are beyond sensible observation. For the impetus with which we impel an object does not end when the apparent movement of the object ceases.

By the well known law of the transmutation of energy, some of the motion goes out in heat through friction and the remainder moves on producing waves in the ether, like a pebble thrown into a pond.

The ending of the energy generated by the movement of a stone, or even so slight a motion as the kick of a fly or the winking of the eye, cannot be conceived in Nature. Many other illustrations might be given.

Again (b) if we study the germ plasm of Weismann, we discover here a substance which has a decided beginning in time, yet which is declared to have an endless existence, if its natural life is not interrupted by accident or otherwise. But its essential element

is inherently immortal. Thus again we see a decided exception to Haeckel's alleged law. However,

(7) We must recall that when we treat of the soul, we are to regard it as Haeckel and other mechanistic biologists define it, namely but a title for the sum-total of human psychic capacities, and then it would seem that it must essentially sometime find an ending. When, nevertheless, we contemplate the element in which the psychic capacities functionate, then we discover an element which in itself seems essentially perpetual or immortal.

Weismann assures us (and while the doctrine is disputed by some biologists, it is now accepted by the majority) that the germ plasm, or vital substance of the cell, is deathless in Nature; therefore, as the psychic faculties operate in this element we see at once (this medium being essentially deathless) that the psychic energy may go on operating forever through such a deathless agency.

But if it is argued that the plasm itself exists only on this planet, and when the body expires it must go down in a stream of life to other planetary organism, or lose its physical existence, we of course admit it, but thereupon in addition learn, that while the physical plasm may expire, except as it descends through other physical living organism, yet the absolute plane in which thought, or the psychic faculties operate, is apparently not material, but supermaterial or insubstantial. We must therefore traverse the possibilities of such a plane of existence.

We learn that this plane is of electro-magnetic and radio-active nature; that it is possessed of attributes

which are wholly contradictory of all forms of material or gross matter, and among these attributes is that of perpetuity or self-generating quality. This is a wholly new field of physical investigation, and science does not seem justified to render any final negative decision as to the possible future history of the psychic powers until it knows more about the possibilities of such a plane of Nature. There is a plane of matter now known to science called by Crookes the "fourth dimension of space" (or "fourth state of matter") where nothing remains of the known properties of matter, except inertia, that is, a moving charge of electricity. This moving charge is the electron, which is the unit or "foundation stone" of all phases of manifest phenomena in Nature. This electron has the property of what is called the self-induction of inertia, that is, the ability of pulling itself along through the ether and thus generating a dynamic force.

"Only the electron exists; it is the unit of electricity" (Crookes). But even the field of the electron is not, as far as science can see through "the use of the scientific imagination," the beginning of matter; for the electron itself, which is a free unit of electricity, has had "elsewhere its setting and, cometh from afar." Crookes saw in 1886 that there must be some primary substance or element from which all forms of matter are generated, and he called it "protyle," meaning something "earlier than the stuff of which matter is made." [2]

[2] On this point Le Bon says:
"If the views set forth in this paper are correct, there exist four

So long as this unfrequented plane of Nature exists, how can we be positive of what may transpire therein so far as mortal man is concerned after he has shuffled off this coil of clay?

Suppose a thought is a form of energy that can gather together a congeries of electrons; that is, suppose the thought organizes electrons, and these charge the cells and nerves of the human organism, as a current of electricity charges a battery or moves along electric wires; then suppose that these psychic organizations of electrons constitute the personality or consciousness of a human being.

You have then *an electrical organization, energized wholly by psychic consciousness,* whose existence is distinguishable from the material organization that surrounds it. Now as this organization of electrons consists of indestrucibtle units, purely electrical, its properties would be entirely different from those of the material body, and would be essentially immortal. At least it seems palpable that until we are better acquainted with this curious realm of natural activities, and know more of the medium through which

successive forms of matter. Two are known to us by experience; the first and the last are as yet hypothetical.

The first form is that exhibited by ether.

The second, that of ordinary matter, formed of atoms, which are according to our view, only condensed energy in a special state, from which result form, weight, fixity.

The third form, with which dissolution commences, is represented by the so-called electric atom (electron), a substance intermediate between ordinary matter and the ether — that is to say, between ponderable and the imponderable. The matter has lost its weight, its inertia is no longer constant, and its fixity seems to be transitory.

The last phase of existence of matter would be that in which the electric atom (electron) having lost its individuality, that is to say, its fixity, disappears in ether. This would be the final term of the dissociation of matter, the final nirvana, into which it seems that everything must return afer an ephemeral existence. (Le Bon, Revue Scientifique, 4th series, vol. XX, nos. 16, 18, also Smithsonian Report 1908, p. 291.)

psychic powers and the personal consciousness function in that plane, we are not justified in postulating anything final as to the ultimate fate of the aggregate psychic faculties of man or the human soul.

In 1809 Sir Humphrey Davy, contemplating the possible discoveries that science might make in such a realm of Nature as we see she has now penetrated, exclaimed: "If such generalizations should be supported by facts a new, a simple and a grand philosophy would be the result." And Sir William Crookes, in his famous address before the Congress of Applied Chemistry in Berlin, 1903, ventured to say: "We have assuredly touched the border land where matter and force seem to merge into one another—that shadowy realm between the known and the unknown. I venture to think that the greatest scientific problems of the future will find their solution in this border land, and even beyond; here, it seems to me, lie ultimate realities, subtle, far-reaching, wonderful."

It is because of this newly discovered shadowy realm and the possible problems which science will soon solve there, that makes me feel confident she is not yet sufficiently equipped to justify her in making a final negative declaration relative to the possible future existence of human beings.

(8) Ostwald, the eminent chemist of Europe has raised the objection that "we can conceive of a universal catastrophe which would annihilate all the descendants of the first cell or cells." Hence he argues that would make impossible the realization of that immortality to which man aspires.

If, however, the primary cells were detroyed in a universal cataclysm, that event would not expunge

the ultimate essence of which they consisted; and the fact that Nature was itself inherently possessed of the ability once to generate the vital units would enable her to re-enact the same drama, and thus prove that life as a permanent principle in Nature cannot be denied. Science seems to prove that all matter is essentially qualified with life, and the absolute destruction of this vital principle or "biotic energy" would appear to be an impossible event in Nature.

(9) Another objection presented by Ostwald in his Ingersoll lecture which has not been noticed in the previous pages is as follows:

"If a man survives his body the continuity of the existence is broken by death, and if he is possessed of immortality of some kind, it can only be of a partial nature."

In one sense it might be said that this statement begs the question; for the very problem is whether continuity of existence is actually broken by death. But it may easily be shown that, supposing after-death-existence a possibility, death no more breaks the continuity than the nightly sleep breaks the continuity of our earthly lives. When we enter sleep we have become either totally oblivious of our existence or we have created a wholly new world for ourselves in the realm of dreams. We are no longer ourselves as we daily know ourselves to be in our waking state.

This certainly is a break as distinct as death itself could be, provided we live on. Yet we know that the continuity of consciousness is not at all broken by sleep or the intervention of a dream-world in our

experience. Though we may have been the king of England in our sleep, or some great sea captain conquering foes with matchless prowess, when we awake we again recognize ourselves in the humble characters to which we have been alloted.

This same proof of the actual continuity of consciousness of individual life is even more positively or empirically proved in the experiment of hypnotism. In that state not only is the personal consciousness completely lost but it may be transformed into any number of changing consciousnesses or personalities. Yet when the subject is restored, at once, at the will of the operator, he returns to his normal consciousness. There has been no actual break in the continuity of the self-existence, though outwardly there seemed to transpire a positive and serious break. Therefore Ostwald's objection plainly falls to the ground when mustered to oppose the possibility of the after life, for our present experience belies the very result he contemplates.

(10) Haeckel's objection to the fact of physical immortality in the germ plasm as advocated by Weismann, and therefore an illustrative proof of the non-existence of an immortal life beyond, is that when the cell propagates it does so by fission, and thereby the original cell is itself destroyed. Immortality to the cell itself, he argues, is therefore impossible.

As shown in the previous pages this is a very poor argument for the fact is that in fission the original cell itself remains, merely dividing itself into two parts, each of which is fully equipped with all the capacities of the original cell, which gives off only a

part of itself but continues to live its own life. No more has the original cell disappeared than a human parent disappears when propagating, by departing with a portion of its vital essence. The original cell, fully capacitated for all the offices of the cell life, lives on forever, merely sloughing off a half of itself, but in no wise limiting its complete nature as a living cell.

(11) Because there is no acceptable or absolute proof that any one of all the countless millions of human beings who have departed from this earth has ever returned in spirit form to communicate with those who still live on this planet, it is argued we have sufficient proof of the fact that none of them live on hereafter. Naturally until we know whether there is a communicating medium between the two worlds, whether, in other words, the beings that have gone beyond are empowered with the capacity to return to or communicate with this realm of existence, we cannot decide that they do not yet live because we do not hear from them.

The burden of the argument would be on the objector. He must first show that such an intercommunication is a possibility; that there actually exists a medium or instrumentality which the spirits of those who have gone beyond might utilize if they choose to. But as there is no indisputable proof of the existence of such a medium or the possibility of such an intercommunication, naturally the fact that they do not so communicate is no disproof of their possible existence.

(12) Because of so many dead worlds in the

vacuous distances of space, where Astronomy seems to indicate the birth and death of suns and stars and planets, it has been asserted that nothing but man's own egotism could ever have given him the temerity to assume his indestructible existence forever in realms beyond.

This argument fails at once in the light of the discoveries of modern physics. For now it is learned that the supposed complete and absolute death of worlds and planets is probably a myth; that in the first place, probably only such worlds have perished as have met with concussions or accidents, and that in the second place, the assumption that worlds must die as they gradually lose the benefit of solar radiation on which they depend for their existence, is now also shown to be untenable. The planets and stars are now known to have self-resuscitating energy within their own composition which gives forth sufficient heat for their sustenance for countless millions of years even though the sun's radiation ceased entirely. [8]

(13) Because evolution has traced man's descent from the lower animals without a break, and that the difference is but one of degree but not of kind, it is

[8] "It is now possible to renew the discussion . . . . whether or not the universe is losing its available energy and is going steadily to a condition of rest and extinction; whether or not the universe is a clock running down.

Only yesterday, practically, the affirmative side of this question seemed to be one of the safest and surest conclusions of modern science. But we have seen more than one of these long-accepted generalizations seriously impugned, and it may be that, in the light of the new knowledge, we shall find that this widely accepted dictum of science, that the universe is proceeding fatally to the extinction of its available energy, is also legitimate matter of deliberate question." (R. K. Duncan's "New Knowledge," p. 241.)

assumed that as the lower animals have no future life neither can man have. The similitude breaks at once when we contemplate the evolution of the psychic faculties or the consciousness of animals and man.

In the psychic evolution of the lower animals, there has come a full stop. Man too has stopped in physical evolution; yet even here there is no certainty that the stop is full and final. But with the lower animals both in psychic capacity and in morphological development the stop is final and complete. Therefore the fact that man has an expanding self-consciousness and ever widening psychic capacities, shows that he is not to be compared as to the possibilities of his nature with those of the inferior kingdoms.

As well say because the fish and reptile were never permitted to expand wings and fly into the air, therefore by no possibility could there be flying birds. That would be absolutely true to the fish world which would have no consciousness or realization of the bird world. Yet we know Nature saw to it, that in the fulness of time the bird world should evolve from the fish and the reptile world. There is no possible comparison to be drawn between the potential faculties of man and the limited faculties of the already finished lower kingdoms.

(14) It is sometimes triumphantly demanded that if there be a soul in man susceptible of immortality, insomuch as immortality is impossible to the lower animals, then the exact place and point in the evolution of man should be indicated when the soul in him began, and when began his potential immortality. The answer is clearly set forth in the story of the

evolution of self-consciousness. The exact time when man ascends from the plane of the inferior animal-kingdom — appears to be when as man he first begins to come to consciousness, and that is placed by some psychologists at the second year, when the physical organ of thought and consciousness germinally unfolds. So that even by studying the physical formation of the human brain[4] we may discern an answer to this subtle yet fallacious objection to the possible immortality of man.

(15) It is again objected that as the mind is a function of the brain when the brain expires necessarily self-consciousness must expire with it. But it has as yet by no means been clearly proved by science that the mind is a function of the brain and that the brain's existence is prior to that of the mind.

First, we are to note the process of rational phenomena in Nature; although there may be no antecedent design or purpose there is manifestly a rational procedure throughout it all. It is admitted by biologists and zoologists that living organisms give evidence, even in their minutest tissues and cells, of purpose everywhere. So long as Nature, then, executed or accomplished rational acts, before

[4] Even Haeckel, who of course stands stoutly for the biogenetic theory of the human soul, and insists that in nature and potential future existence it cannot be differentiated from that of the inferior forms of life, says:

"Personally out of many contradictory theories, I take that to be the most probable which holds the centralization of the nervous system (Haeckel's boldface) to be a condition of consciousness; and that is wanting in the lower classes of animals." ("Riddle of the Universe," p. 175.) (Boldface type by the author.)

And again: "I share the view that true consciousness (thought and reason), is only present in those higher animals which have a centralized nervous system and organs of sense of a certain degree of development." (Idem p. 182.)

the brain of man came into existence, it is manifest that what we call thinking or a mental process existed before the brain of man was formed.

But again we have even nearer to us a better illustration of the priority of mind and its supremacy over the brain in the actions of what we call vicarious organs. That is, when an injury has befallen an organ, other organs in the system, unaccustomed to such duties, will perform them, even though the original organ is never improved and restored.[8] If it is not consciousness or a mental process that accomplishes this function, and thus proves that it is qualifiedly superior to the submissive office of the brain, then there is no apparent explanation to be had.

(16) Once more, it is argued that because the primitive conception of the soul's existence arose among savage tribes in attempting to understand the existence and nature of the shadow that follows the body in the sunlight, therefore the entire conception of the soul and its possibilities is a product of mythical imagination and should be disowned by scientific thought.

[8] This vicarious action seems to begin at the very fountain head of life, in the vital cell. The cells are motivated by such marvellous intelligence that we are forced to attribute to each of them an individual mind. Showing how these cells not only affect their obvious functions in receiving food and eliminating waste, Dr. Moore says in his "Origin of Nature and Life", that "the classes of cells are greater artists and take wider interest than this; few of them resemble in narrowness of life and austerity of outlook the so-called human specialist. In nearly every case the cell of a given type possesses what might perhaps be described as a hobby in addition to its more obvious function, and the secret hobby is often more all-important than the obvious day's task, for in some instances the obvious function may be destroyed without causing death, its place being UNDERTAKEN VICARIOUSLY BY SOME OTHER PART." (Home Lib. ed. p. 229, 30.) (Boldface type by the author.)

As well say that because all that we now know originated in ignorance; since all the hypotheses and discoveries of science, or at least many of them, originated in the fanciful dreams and conceptions of minds inspired by vagaries and foolish theories, therefore this age of culture must disown what science has actually achieved by its labors.*

Manifestly the duty of science is to investigate and explain the origin of heathen and savage theories and notions, but because out of such vagaries and phantasies there has developed a more rational hypothesis of human existence is no reason why such a deduction should be rejected as absurd.

Even if it were absolutely true that the notion of the soul arose from the shadow, and the notion of an after existence arose from the experience of dreams, which is probably true; that would not necessarily demonstrate the fact that there is no soul and no hereafter. For, however ridiculous the original heathen or savage conception may have been, a later and more intelligent interpretation of human life might lead to a similar deduction, even though the basis of the heathen's deduction was wholly false and ridiculous.

*The eminent Swedish Astronomer, Arrhenius, in his "Life of the Universe" (Harper's Lib., Living Thought, vol. 1, p. 54), hints this fact when he says, referring to the primitive Beliefs as to Creation: "I have attempted to sketch out the cosmical beliefs dating from the ages in which direct physical observations were hardly known. Natural science then appears in the garb of myth; when risen to a higher level it assumes the many-folded cloak of philosophy. Matters change when observations and experiences are collected. Then man begins to look for general rules, under which the cumbrous mass of data can be classed in simple, lucid form."

CHAPTER XXI

Why Science Has Not Answered the Riddle

We will here tersely summarize and recapitulate the tentative reasons (previously discussed in considerable detail) why we think science is not yet qualified by sufficient information to assert the absolute denial of the possibility of an after existence to humankind.

(1) Science is yet too ill-informed as to the ultimate realities of Nature, and of the origin of planetary life to pronounce final judgment as to its potential continuity after death.

(2) Science does not seem to be justified in proclaiming protoplasm — the physical basis of life — the subject of inherent decay and ultimate dissolution.

(3) Science is not yet sufficiently acquainted with the complex structure of the cell of life, and its mysterious vital energy, to declare that it contains no elements that may survive the shock of death and form the basis of a new existence.

(4) Science has attained no final consensus as to the problem of the Vital Force, or the theory that Vitalism is a distinctive energy in Nature, independent of the physical forces; therefore, she should feel compelled to pause in her pronouncement as to the final possibilities of such a force, once manifested on earth, and as to the actual annihilation of a principle that seems paramount in Nature.

(5) The nature and possibilities of Consciousness are still the crux of philosophy and psychology, and science does not seem justified in declaring that it is a mere function of the brain or a product of the molecular activity of the brain substance.

(6) Like consciousness, thought still puzzles the contemplations of science and philosophy, and its nature and possibilities are yet to be apprehended. Science now rejects its former attitude that it is a secretion of the brain cells as bile is of the liver, and seems inclined to regard it as an activity parallel with the activity of the brain cells. It is therefore not yet justified in declaring that such an activity is temporal until it is more thoroughly acquainted with its nature and the laws that control it.

(7) Science in recent years has discovered the dissolution of the atomic units of matter and reduced matter to a plane of immaterial substance, similar to that of alleged spirit, and qualified with extraordinary powers wholly contradictory of those of gross matter.

(8) As the ultimate essence of the vital principle may consist of this immaterial phase of matter, whose properties utterly contradict the properties of visible and perishable matter, Science does not yet seem to be justified in declaring that this vital principle must dissolve with the death of the organic body.

(9) In view of the achievements of mental control over physical functions by the exercise of hypnotic suggestion, Science does not appear justified in declaring the priority of the brain and its superior control of the mind, or that the mind, as consciousness,

is not a permanent principle and may survive the cessation of the physical functions in death.

(10) In view of the achievements of modern Psychical Research, the discovery of telepathy and thought transference, as well as alleged spirit-communion, Science should reserve its final negative verdict on the fate of the dead, at least until a consensus of opinion may be legitimately attained as to the nature and correct interpretation of such experiences.

(11) Considering the limitations of man's perception and his powers of reason, when contemplating the infinity of the universe and its vast potencies and possibilities, is it not too presumptuous for Science dogmatically to assert a negative enunciation relative to the potential existence of a realm of whose nature it as yet knows but very little, and whose laws and properties are apparently beyond the present apprehension of the human mind?

In a universe such as this that seems to be framed by the milky way, where the light of a star traveling at the rate of 186,000 miles a second beginning at any point would require to traverse the entire distance and return to the same point 300,000,000 of years, it would seem that we must be modest when we attempt to decide upon any of the ultimate problems of existence. For the present, at least, Science must raise at the grave not an exclamation, but an interrogation, in humble inquiry.

"It may be so with us, that in the dark
When we have done with Time and wander Space,
Some meeting of the blind may strike a spark,
And to Death's empty mansion give a grace.

It may be, that the loosened soul may find
Some new delight of living without limbs,
Bodiless joy of flesh-untrammelled mind,
Peace like a sky where starlike spirit swims.
It may be that the million cells of sense,
Loosed from their seventy years' adhesion, pass
Each to some joy of changed experience,
Weight in the earth or glory in the grass.
It may be that we cease; we cannot tell.
Even if we cease, life is a miracle."

CHAPTER XXII

The Bankruptcy of Scientific Theories

Concerning so vast and difficult a problem it is especially judicious that Science maintain a patient, cautious and undogmatic attitude, for Science herself has so often been forced to retract many of her hypotheses and even her imagined laws of Nature.

We must not fail to remember that what are termed laws of Nature by Science are after all but the keen interpretations, the penetrating deductions, the happy guesses of brilliant geniuses.

No scientist in the world today is sure that tomorrow will not reveal a new field of facts in Nature that may compel him wholly to revise his interpretation of the Cosmos and restate even what he has long regarded as its fundamental laws.

It may seem startling and by many unbelievable that such declarations are truthful, nevertheless a brief review of the history of some of the alleged discovered laws of Nature by scientists will sustain the assertion.

For many centuries Astronomers advocated the hypothesis of the geocentric conception of the universe. Within the compass of man's knowledge, in that age, the hypothesis was justified and dogmatically assured. Indeed so positive was the science of that time (unfortunately re-enforced by the autocracy

of a religious hierarchy) that it endangered one's life to attempt even to question the notion that the earth was the centre of the Cosmos, the largest and the most important of all the stars and worlds exposed to human observation.

It must not be forgotten that when Copernicus (1473-1543) discovered the mechanical arrangement of the heavens and the motion of the stars, wherein the ancient Ptolemaic astronomy was challenged, and the geocentric theory demolished, he lay in fear, with this discovery under his pillow for nearly thirty years, and then only, with trembling prayers for mercy, delivered his message to the world.

We are inclined to rebuke the ecclesiastical authorities of that age for its terrorism and consequent retardation of scientific discovery; but we must not forget that the ecclesiastical attitude was also the attitude of the then extant scientific mind, and the scientists of that day were as much to blame and worthy of rebuke as were the ecclesiastics.

I refer to this humiliating situation in the scientific world, which was still more humiliatingly illustrated in the case of Galileo, who was forced to lie about his discovery of the satellites of Jupiter, merely to emphasize the necessity of a philosophical disposition in attempting to discern the true laws of Nature, and the virtue of modesty even among those who are so privileged to penetrate the mysteries of the universe. For we shall find that the absurd tyranny of bigotry against the instinct of discovery and progress was a blight not only on an age of comparative universal ignorance, but that it has even mildewed many

a bright flower of scientific genius in more intelligent epochs.

Before Dr. Priestley (1733-1804) accomplished the arduous task of discovering oxygen which culminated in the analysis of the air, such a simple phenomenon as a burning flame created much confusion of thought in the scientific world and defied rational explanation. Among many theories presented the one commonly adopted in that period of awakening knowledge was that of "phlogiston".

This hypothesis assumed that when a flame was produced Nature mysteriously introduced into the burning object an unkown substance called "phlogiston," which itself constituted the element of flame. According to Stahl there was a difference between a flame that represented fire in action, or as we would now say dynamic or kinetic flame, and a flame invisibly latent within a burning object, which we would now call potential flame.

Of course the theory was purely imaginary and when the true origin of the flame was revealed by the discovery of Priestley's oxygen, whose affinity for carbon dislodged the mystery and revealed the truth, the hypothesis was reluctantly relinquished.

The opposition to Priestley (doubly aggravated by his nonconformism and his defense of French Revolutionists) was so great that he suffered personal injury and the destruction of property as the price he must pay for divulging to a brutal age an honest truth which had been vouchsafed to his genius. Think not that it was only the theologic opposition which he was forced to endure. The scientists of his time, reared

in the old school of dogmatism and cock-sure tyranny, opposed him as bitterly as did the Biblicists.

Dr. William Harvey (1578-1657), the discoverer of the circulation of blood, met with a similar experience; according to some authorities, his practice completely fell away, and " 'twas believed by the vulgar that he was crackbrained, and all the physicians were against him."

Slowly through the ages the iron bands of mental tyranny were melted and men dared to investigate Nature, and study and reveal her wonders without incurring the suffering and humiliation of the past.

Nevertheless the instinctive tenaciousness of the human mind to cling to a conception once avouched is steadily manifested in the history of scientific progress.

Thus, one by one Science seems to be compelled to surrender many of her past positions. For instance but a little while ago we had supposed that La Place's discovery of the origin and mechanism of the heavens was an hypothesis which Science accepted as almost final truth.

The nebular hypothesis had become a creed sworn by among the leading and legitimate astronomers of the world. But in our day the theory is considerably modified by another, called by Chamberlain the "planetesimal hypothesis", which may ultimately necessitate the re-writing of text books and revision of the interpretation of the origin of the Cosmos. So that the classic Nebular Hypothesis, while it may not be laid entirely on the shelf, will not hereafter hold

the absolute and supreme position in the scientific world which it has to the present maintained.

Of course we have so far advanced in the practical principles of freedom that the announcement of a new hypothesis, which overthrows the foundations of an ancient and classic theory, no longer convulses the age and causes terror in the human heart. Yet, I mention this experience to illustrate how the theoretical attitude for a long period honored by Science is forced to suffer change, as the Book of Nature divulges more of her secret knowledge.

Likewise, as shown in previous pages of this study, the time honored conception of the final conflagration and destruction of this planet and even the entire solar system, which had so long called forth lugubrious and mournful sermons on the instability of the universe, is now discovered to be probably a myth and the starry worlds as well as our own planet are endued with inherent energy enough to maintain their existence, in spite of the cessation of the sun's radiation, for countless millions of years.

And even more startling possibilities of revolutionary scientific deduction are threatened by some bold and undiscouraged investigators. For there are those who are temerarious enough to assert that the time honored laws of matter and energy, which postulated that matter was indestructible and energy could never increase or decrease its total cosmic sum, are about to be relegated to oblivion. If this should succeed it would indeed undermine the foundations of the entire system of modern scientific instruction and compel a completely new interpretation of Nature.

BANKRUPTCY OF SCIENTIFIC THEORIES

In 1843 the equivalence between mechanical work and heat was definitely discovered. This gave rise to the distinct definition of the conservation of energy which was stated by Clerk Maxwell as follows: "The total energy of any body or system of bodies is a quantity which can neither be increased nor diminished by any mutual action of such bodies, though it may be transformed into any one of the forms of which energy is susceptible."

This law was regarded as so fundamental and absolute when finally discovered, though often tentatively approached before, that it was not supposed the time would come when it would be questioned or denied. Huxley declared: "It follows that energy like matter is indestructible and ingenerable, in Nature. The phenomenal world, so far as it is material, expresses the evolution and involution of energy, its passage from the kinetic to the potential condition and back again. Wherever motion of matter takes place, that motion is affected at the expense of part of the total store of energy."

Now it is remarkable that recent laboratory experiments are beginning to force the question whether this law is, after all, fundamental and universal; whether, indeed, both the indestructibility of matter and that of energy are not to be called in question. Such authorities as M. Lucien Poincare ("Science and Hypothesis") and Gustave Le Bon ("Evolution of Matter" and "Evolution of Forces") not only intimate that the hypotheses must be surrendered but declare that Science demands it. Descanting upon the final disappearance of the electron, or electric atom,

Le Bon says (Revue Scientifique, vol. xx), "Matter considered as energy condensed under a form in which it acquires weight, form, and fixity has become transformed into imponderable elements that are no longer matter, but are not yet ether. Of their destiny we are still ignorant. . . . But how can they disappear? Can we suppose that their destiny is like that of blocks of ice that float about in the polar regions and preserve their individual existence so long as they do not encounter the only cause that can destroy them — an elevation of temperature? As soon as this cause of destruction acts upon them they vanish and disappear. When it has radiated all its energy it disappears in ether and is no more."

This possibility of the ultimate resolution of matter and energy into pure ether points not only to the disappearance of matter but even of energy.[1]

It is a conception that overwhelms all the classic notions of the past, since the days of Aristotle and Thales, as to the indestructibleness of matter, yet far seeing modern physicists are not fearful of making the declaration. Even Sir William Crookes, in his famous address before the Congress of Applied Chemistry, already referred to, says, "Although the whole range of human experience is all too short to afford a parallel whereby the date of the extinction of matter can be calculated, protyle, the 'formless mist', once

[1] "This conception evidently does not agree with the first principle of thermo-dynamics; but if the dogma of the indestructibility of matter is taken away; that of the conservation of energy seems likewise somewhat menaced. . . . It seems very probable, and I am not alone in thinking so, that the law of the conservation of energy, whose uncertain limits have been so brilliantly demonstrated by M. Poincare in his recent work, 'La Science et l'Hypotheses', is, like most physical laws . . . . true only within limits." (Le Bon as above.)

again may reign supreme, and the hour hand of eternity will have completed one revolution."

Thus it is never safe for scientific dogma to assert itself and declare the impossibility of a revolutionary discovery.

It is a suggestive fact that at the very moment that Cyrus Field was preparing to lay the Atlantic Cable, an Oxford professor was diagrammatically expounding upon a blackboard, by mathematical accuracy and determinism, the utter impossibility of such a feat within natural limitations. And in the very year that Darwin was born (1809) Cuvier was triumphantly exclaiming the impossibility of the transmutation of the species and the fixity in Nature of species that now exist; arranging in his laboratory at the time the bones of reconstructed skeletons of animals whose fossil existence unwittingly belied the very declaration he was making.

If then Science is compelled so often to review and reinterpret the nature of phenomena and the fundamental principles of the universe, it certainly becomes it well to be modest in the presence of a problem so profound as that involved in the potentialities of planetary life, and its prophetic possibilities beyond the grave.

[1] "The orthodox scientific beliefs of one generation become, in part, at least, the scientific myths of a succeeding one, and science, just as much as religion, possesses its dead mythology. It by no means follows that these myths of religion and science did not serve a useful purpose in those days when they were living and powerful beliefs, but, when new knowledge, power and methods arise, they must be cast on one side, and replaced by better machinery to lead to new revelations. They are the scaffolding of the structure in the course of erection and not an intrinsic part or a permanent adornment of it." (Dr. Moore's "Origin of Nature and Life," p. 26, 7.)

CHAPTER XXIII

Schopenhauer's Fallacy

To illustrate the manner in which metaphysics or philosophy may confuse the potential realities of Nature, may not the author at this juncture introduce that very fetching dialogue invented by Schopenhauer on the presumed annihilation of the individual in the grand dramatic Tragedy of Being.

IMMORTALITY: A DIALOGUE

THRASYMACHOS — PHILALETHES

THRASYMACHOS. — Tell me now, in one word, what shall I be after my death? And mind you be clear and precise.

PHILALETHES. — All and nothing.

THRASYMACHOS. — I thought so! I gave you a problem and you solve it by a contradiction. That's a very stale trick.

PHILALETHES. — Yes, but you raise transcendental questions, and you expect me to answer them in language that is only made for immanent knowledge. It's no wonder that a contradiction ensues.

THRASYMACHOS. — What do you mean by transcendental questions and immanent knowledge? I've heard these expressions before, of course; they are not new to me. The professor was fond of using them, but only as predicates of the Deity, and he never talked of anything else; which was all quite right and proper. He argued thus: if the Deity was in the world itself, he was immanent; if he was somewhere outside it, he was transcendent. Nothing could be

clearer and more obvious. You knew where you were. But this Kantian rigmarole won't do any more: it's antiquated and no longer applicable to modern ideas. Why, we've had a whole row of eminent men in the metropolis of German learning —

PHILALETHES (aside). — German humbug, he means.

THRASYMACHOS. — The mighty Schleiermacher, for instance, and that gigantic intellect, Hegel; and at this time of day we've abandoned that nonsense. I should rather say we're so far beyond it that we can't put up with it any more. What's the use of it then? What does it all mean?

PHILALETHES.—Transcendental knowledge is knowledge which passes beyond the bounds of possible experience, and strives to determine the nature of things as they are in themselves. Immanent knowledge, on the other hand, is knowledge which confines itself entirely within those bounds; so that it cannot apply to anything but actual phenomena. As far as you are an individual, death will be the end of you. But your individuality is not your true and inmost being: it is only the outward manifestation of it. It is not the thing in-itself, but only the phenomenon presented in the form of time; and therefore with a beginning and an end. But your real being knows neither time nor beginning nor end, nor yet the limits of any given individual. It is everywhere present in every individual, and no individual can exist apart from it. So when death comes, on the one hand you are annihilated as an individual; on the other, you are and remain everything. That is what I meant when I said that after your death you would be all and nothing. It is difficult to find a more precise answer to your question and at the same time be brief. The answer is contradictory, I admit; but it is so simply because your life is in time, and the immortal part of you in eternity. You may put the matter thus: Your im-

mortal part is something that does not last in time and yet is indestructible; but there you have another contradiction. You see what happened by trying to bring the transcendental within the limits of immanent knowledge. It is in some sort doing violence to the latter by misusing it for ends it was never meant to serve.

THRASYMACHOS. — Look here, I sha'n't give twopence for your immortality unless I'm to remain an individual.

PHILALETHES. — Well, perhaps I may be able to satisfy you on this point. Suppose I guarantee that after death you shall remain an individual, but only on condition that you first spend three months of complete unconsciousness.

THRASYMACHOS. — I shall have no objection to that.

PHILALETHES. — But remember, if people are completely unconscious, they take no account of time. So, when you are dead, it's all the same to you whether three months pass in the world of unconsciousness, or ten thousand years. In one case as in the other, it is simply a matter of believing what is told you when you awake. So far, then you can afford to be indifferent whether it is three months or ten thousand years that pass before you recover your individuality.

THRASYMACHOS. — Yes, if it comes to that, I suppose you're right.

PHILALETHES. — And if by chance, after those ten thousand years have gone by, no one ever thinks of awakening you, I fancy it would be no great misfortune. You would have become quite accustomed to non-existence after so long a spell of it — following upon such a very few years of life. At any rate you may be sure you would be perfectly ignorant of the whole thing. Further, if you knew that the mysterious power which keeps you in your present state of life had never once ceased in those ten thousand years to bring forth other phenomena like yourself,

and to endow them with life, it would fully console you.

THRASYMACHOS. — Indeed! So you think you're quietly going to do me out of my individuality with all this fine talk. But I'm up to your tricks. I tell you I won't exist unless I can have my individuality. I'm not going to put off with "mysterious powers," and what you call "phenomena." I can't do without my individuality, and I won't give it up.

PHILALETHES. — You mean, I suppose, that your individuality is such a delightful thing—so splendid, so perfect, and beyond compare—that you can't imagine anything better. Aren't you ready to exchange your present state for one which, if we can judge by what is told us, may possibly be superior and more endurable?

THRASYMACHOS.—Don't you see that my individuality, be it what it may, is my very self? To me it is the most important thing in the world,

"For God is God and I am I."

I want to exist, *I, I.* That's the main thing. I don't care about existence which has to be proved to be mine, before I can believe it.

PHILALETHES. — Think what you're doing! When you say *I, I, I* want to exist, it is not you alone that says this. Everything says it, absolutely everything that has the faintest trace of consciousness. It follows then, that this desire of yours is just the part of you that is not individual—the part that is common to all things without distinction. It is the cry, not of the individual, but of existence itself; it is the intrinsic element in everything that exists, nay, it is the cause of anything existing at all. This desire craves for and so is satisfied with nothing less than existence in general—not any definite individual existence. No! that is not its aim. It seems to be so only because this desire—this will—attains consciousness only in the individual, and therefore looks as

though it were concerned with nothing but the individual. There lies the illusion, an illusion it is true, in which the individual is held fast: but, if he reflects, he can break the fetters and set himself free. It is only indirectly, I say, that the individual has this violent craving for existence. It is the will to live which is the real and direct aspirant — alike and identical in all things. Since then, existence is the free work, nay, the mere reflection of the will, where existence is, there too, must be will: and for the moment, the will finds its satisfaction in existence itself; so far, I mean, as that which never rests, but presses forward eternally, can ever find any satisfaction at all. The will is careless of the individual: the individual is not its business; although, as I have said, this seems to be the case, because the individual has no direct consciousness of will except in himself. The effect of this is to make the individual careful to maintain his own existence; and if this were not so, there would be no surety for the preservation of the species. From all this it is clear that individuality is not a form of perfection, but rather of limitation; and so to be freed from it is not loss but gain. Trouble yourself no more about the matter. Once thoroughly recognize what you are, what your existence really is, namely, the universal will to live and the whole question will seem to you childish and most ridiculous!

THRASYMACHOS.—You're childish yourself and most ridiculous, like all philosophers! and if a man of my age lets himself in for a quarter-of-an-hour's talk with such fools, it is only because it amuses me and passes the time. I've more important business to attend to, so good-by.

In this delightful conversation, however, does not our amiable philosopher lose sight of Nature's own prophetic intimations?

Is not the cry of the "I" within, the urge of Nature that prophesies a far-off culmination of her efforts? As we shall see hereafter Nature casts ultimately in the mould of physical form the psychic purpose whose end she serves. As she has already achieved her prophecy in the amoeba by crowning its ascent in the glorious culmination of Man, so she is now revealing to us the fact that in man only has self-consciousness come into being because in him only among all animals has she prepared the physical frame through which self-consciousness—the "I" can exist and manifest its functions.

Already in the amoeba the germinal consciousness existed but Nature required inconceivable aeons for the perfection and fulfillment of its towering culmination in human self-consciousness.

Are we not then justified in assuming, on the assurance of Nature's laws, that, as ultimately she fashioned the apparatus or instrument in man, through which self-consciousness (the "I") could function, now that through that very instrument she institutes the cry or yearning for endless persistence or uninterrupted continuity of that "I" (self-consciousness), that she will esewhere and somehow evolve a framework, indestructible in character, through which this evolving consciousness may manifest its functional force?

That is the thesis we endeavor to elucidate in this treatise. In the same manner, Ernst Haeckel, of Jena, writing upon a similar theme, seems to overlook the principle of the persistence of energy, and its consequent possibilities in the evolution of conscious-

ness. We need not dispute his premise that consciousness originates in the germinal plasm or life-unit and by natural processes eventuates in the wonderful brain and self-consciousness of Man. But where we differ from Haeckel is in his conclusion that the inertia of the energy, which begins in amoeba and attains its climax in man, then ceases to exist and in contradiction of the theory of the permanence and indestructibility of energy is totally annihilated or passes into a new variety of dynamic expression. Let us examine his conclusions.

Speaking of the "Eternity of Energy," he says: "The dynamic or energetic principle of our Monism, the principle of the constancy of force, forms the basis of the assumption that all phenomena of the universe are referrable to the actions of one and the same attribute of substance—an all pervading cosmic force (energy or *dynamis*, formerly called simply "force" by analogy with the action of the muscles)."

Again, speaking of what he calls "The Eternity of the Psychom," he says, "The psychological principle of our monism, the constancy of the world-soul, in inorganic as well as in organic nature, are connected with a certain inner kind of sensation which gives the different parts of matter an unconscious perception of their environment, of the outside world. This 'soul' in matter is shown most clearly in the fundamental law of chemistry, called chemical affinity."

Thus far we observe he emphasizes the *dynamis*, the energy, in its evolving forms of expression. Evidently it is this dynamis, whatever it may absolutely

be, which is the formative and propulsive principle at work in world-evolution.

He then calls attention to a feature of impermanence that paradoxically complements the universal and infinite permanence of Nature. Of "Eternity and Impermanence," he says, "In apparent contradiction to the all pervading law of substance, the eternity of the universe, is the great natural law of the impermanence of each separate part in it, of the limited duration of individual things." "The reason for this contradiction is that all individual forms are limited in time and space and dependent on the outside or surrounding world. . . . Pythagoras and his school were wrong in assuming that form is the essence of all things. . . . Evolution does depend, however, on constant change, a metamorphosis of individual parts."

Now on these postulates Haeckel rests his conclusion of the absolute destruction of individual life in death and states his proposition as follows: "According to the scientific conception of Monism the human spirit is either identical with the human soul, or it is regarded as a special higher part of its activity. In either case it is a function of the phronema, the organ of thought in the brain. With the destruction of the brain at death, therefore, it too, perishes." [1]

Superficially this appears as a strong and convincing argument. But let us accept it at its face value, discounting none of the propositions or premises.

[1] The quotations are made from an article by Haeckel on "Science and Eternity" in the Truth-Seeker (N. Y.), March 4, 1916. See also Haeckel's last book, "Eternity."

Does the logical deduction which Haeckel reaches become mandatory?

He speaks of the phronema, the brain, etc.; he also speaks of individual forms which enjoy only temporary existence (impermanence) in the midst of the universal permanence of the Energy, the universal *Dynamis*. Now, what is the cause of the form, in Haeckel's system of Monism? Answer: *Dynamis*. What is the cause of the destruction and transformation of individual forms or things? Answer: *Dynamis*. What is the reason of the impermanence and transformation of things or forms? Answer: The demand of the *Dynamis* for larger and more complete expression. In Evolution the unfolding apparatus developes into higher and more enduring forms.

Now, then, on Haeckel's own ground, what is the origin of the spirit, or soul or consciousness of man? Answer: The infinite and universal *Dynamis*. Through what form of matter does the consciousness of man express itself? Through the brain and nervous system. Why were the brain and phronema organized and formed? Answer: That the *Dynamis* might have an apparatus through which better to express itself than through the nervous apparatus of the lower animal kingdom.

What was it that worked on through all evolution from fundamental chemical affinity (sensation) to the self consciousness of Man? Answer: *Dynamis*.

In short we find according to Haeckel's Monism that the one permanent, persisting and morphogenetic principle which acts as the maker, builder and guide

of all phenomenal expression is the Permanent and all-pervasive *Dynamis* or *Energy*.

We also find that according to this system the *Dynamus* finds the occasion for its higher and more perfect expression through the finer apparatus, which *it builds for itself*, in the ascending scale of evolution from amoeba to Man.

It possesses the phronema, which it has ultimately generated, because in the processes of animal-development a substance (nervous fluid) was finally engendered that made possible the manifestations of *Dynamis* in the phases af animal and human consciousness.

In short, the natural and logical deduction to be drawn from Haeckel's propositions is this: Given a universe of substance susceptible to infinite variation and transformation, and the principle of Permanent Energy which pervades and inheres throughout the universe of substance, and there will result ever unfolding and better adapted apparatus through which the Energy may more fully and completely express itself. *But*: When the apparatus ceases, the Energy, or morphogenetic principle, continues, and necessarily works on.

Now, the energy of consciousness admittedly ceases to act in such form of consciousness, as the brain-apparatus, or phronema, of the present body permits. *But does the inertia of the energy of consciousness cease, because the present apparatus ceases?* That is the question; and by no means does the acceptance of the ultimate principles of Monism demand this conclusion. In this treatise we have

been contending that consciousness is a form of energy, and that the inertia of that energy, once existing, must continue somehow to express itself. It cannot do so through the apparatus of the human brain after death, true. But its continuity will, manifestly, depend on the presence of some phase of substance, which may be amenable to the manipulation of the consciousness-energy. In this treatise we have been contending that there already exists in the human organism, especially in the brain and nervous system, a most rare and primary state of matter, which bears in itself none of the lethal characteristics of ordinary matter. That it is, in nature, permanent. That it is the invisible and imponderable primary substance out of which all manifest substance is ultimately produced. That as universal Energy *(Dynamis)* has revealed its higher potencies in the course of evolution by utilizing more susceptible or qualitatively adapted substances, so it may persist in the expression, at least, of potential consciousness after death.

This same energy, still in unconscious and primitive state, existed in inert matter; then it utilized a finer substance and evolved colloidal matter; then, it seized a still more refined substance and evolved protoplasm, then it exuded (so to speak) from protoplasm a still more refined substance and organized ultra-miscroscopical primitive life-like units; then in these it found a still more susceptible substance and organized the nervous system; then a still more amenable substance, and organized the brain and ultimately the phronema, organ of thought, and thus

crowned all with human self-consciousness. Is it not then manifest if there still inheres in this same life-substance a potentially indestructible and infinitely more pliable substance, than what the crude brain-cells afford, that this same Energy *(Dynamis)* will seize upon and continue to manifest through such substance on an invisible plane, where its activity only can thereafter be manifested?

This is what we contend in this treatise and think we have proven to be a fact. The logic of Monism, not to say the logic of Nature, manifestly points to the continuity of the energy and not to its annihilation, or even its transmutation into another form of visible planetary expression. At the very best Monism may lead us to a pause or a doubt; it cannot logically compel us to assume a final attitude. Until physics ultimately reveals a more perfect knowedge of what primary matter may be and of the possibilities of its manipulation by that form of energy we call consciousness, Monism, or any other philosophy, is not justified in denying the persistence of some form of after death continuance.

But the author of this work is becoming more and more convinced that the present discoveries in natural law are leading us to an apprehension of the fact that Nature is logically pointing to principles which indisputably spell after-life, in some form of germinal and evolving future consciousness, if not in the continuity of present self-consciousness.

BOOK III

Intimations of Scientific Proof of Immortality

CHAPTER XXIV

The Unreality of Death

Thus far we have been studying the efficacy of the alleged *disproofs* of the possible existence of mortal man after his decease. And we might rest here and say that insomuch as there seems to be no possibility of disproving such a potential experience, the race might comfortably remain unconcerned and abide its fate. For if there can be no disproof of a possible immortality, then even though there be no available proof, nevertheless there is a sense of comfort in the fact that the seal of certainty is not fixed, absolutely disqualifying the utility of all further search.

For, though we may be unconcerned, in our clearer states of reason; when despite the cold light of the intellect the grave is overcast with gloom and shadow, and affords no feeble ray of hope; nevertheless, in our more human moments—when the tide of the affections wells within or the joy of mere existence thrills the consciousness—we feel a subtle yearning for life that shall never end, for light that shall never fade.

Indeed, when we contemplate the possibility or actuality of absolute extinction it seems utterly beyond our comprehension.

Who can think himself dead? Who conceive of the absolute cessation of the throbbing of the brain,

the beating of the heart—the end of all thinking, feeling, acting, aspiring?

Who, when in the glory of a resplendent day, he gazes into the golden sky and breathes the exhilarating air that sweeps down from some mountain top; who, when he sinks in deep introspection and listens to the lispings of his very soul in profound meditation; who, in short, when he communes with his deeper self and hearkens to the thoughts that heave from the far profundities of being — can grasp the notion that self shall think, or feel or act no more?

The consciousness of death is an absolute impossibility. We may speak the word—but we can never realize the meaning of it. DEATH! Pause a moment and strive to comprehend it. Strive to realize that when you lie down upon your last bed, pillowed and mattressed by the rude substances of earth, you shall "sleep no more." That you shall sleep the last sleep; that in that last sleep you shall not dream again when you have "shuffled off this mortal coil!" It is not only "the dread of something after death that puzzles the will and makes us rather bear the ills we have than fly to others that we know of;" but it is the utter ignorance of the nature of death—the uncanny presence of a reality we can neither prevent nor comprehend. Hence, however much we may deny, we cannot help but feel that live we must. It may be a delusion—the delusion of the senses that so much deceives us in this world—nevertheless, it is an instinct—a natural reflex of our emotions, and we can no more resist it than the eyelid can refuse to wink

when smitten by dust, or the arm to leap back when stung by a blow.

If this be so it may be the instinct is prophetic of truth, and we are tantalized by its infliction because the deeper self demands that it shall not be slighted or forgotten. Far be it from me to assert, as some few do to-day, and as in former years many did, namely, that this instinct is not only prophetic or suggestive of truth, but, that it is an absolute proof of the actuality of an after existence.

This cannot be accepted as a demonstration for the reason that we know that our instincts often deceive us and we speedily acknowledge our error when truth arrives. It is a natural instinct to fly from danger. A timber falling may kill us, and therefore often we shy at a shadow. The shadow deceived us because of our instinct of self-protection.

So the instinct of life, which is our primal state of consciousness, may deceive us when death approaches, and because it is natural for us to live we instinctively refuse to think that we can die. That indeed may be mere deception resulting from our utter ignorance of death and our constant acquaintance with life. Such an instinct is of no avail as a promoter of Truth.

Nevertheless the fact that the realization of death is an impossibility, and that we do hold such constant fellowship with life, which makes separation forever seem impossible, is a sufficient reason for us never to desist in our labors to discover the truth empirically and demonstrably if the Book of Nature contains aught that may reveal it.

Therefore I shall continue the study to inquire

whether in the acquisition of scientific knowledge any fundamental facts have been divulged which may point, at least tentatively, to a natural possibility of eternal existence. Proof we cannot expect at this juncture of human progress and attainment. But if not proof of fact, it may be possible that probability shall loom large on our observation. It is to this end that we proceed.

CHAPTER XXV

The Appeal of Nature

In the first section of this work I referred to certain corollaries I had drawn from scientific facts in my "Modern Light on Immortality." I called attention to the first corollary, namely, that "when mankind shall have discovered the secret laws that appertain to the art of living—to Nature's own marvellous principles of life-sustentation—we shall have overcome the mystery of death and shall continue to live and fructify in the no longer mortal bodies we occupy." I then proceeded to show to what extent the more recent researches of science seemed to corroborate that prophecy.

In this second section of our study I shall undertake to dwell somewhat upon the second corollary I formulated in that same book, as a necessary deduction from a long series of facts and logical sequences which I there arranged. The interested reader will find the complete discussion in the work referred to ("Modern Light on Immortality") which was issued in 1909. The second logical corollary there presented read as follows:

"That there shall be developed in some organisms such a high degree of self-consciousness that the physical seat, in which the spiritual faculty resides and operates, shall be so controlled and integrated it will be endowed with sufficient strength to continue

its organic activity[1] after this 'mortal coil shall have been shuffled off.' ''

If this deduction were correct, it would lead to the logical conclusion that if after existence be a possibility at all in Nature, then by the law of spiritual and moral survival only such beings would attain to immortality whose strength of character was sufficiently registered in self-consciousness to grant this consciousness the integrating energy of holding together the subtle substance in which the spiritual forces shall continue to exist and function. At once the objector arises and says that no such deduction will satisfy the human instinct of eternal life; that every human being is alike endowed with the desire for immortality, therefore, if Nature grants it to one she must grant it to all. In the great caravansary of human life Nature allows no privileged characters.

Such an objection is an appeal *ad hominem*, but it can have no standing in the court of science. If the law is true as stated; if the indications of Nature point to a survival that shall be attained by the evolution of character and consciousness, and is not a free gift of mere existence, then merely because it is contrary or offensive to human desire and inclination it cannot be thrown out of court.

It is, however, truly astonishing how often educated and cultured folk will fall into this empirical error. They speak as though Nature should afford them such a status of existence as their predilections predispose them to. So some will insist that they

[1] Perhaps I should have said "psychic activities" for whether they will function in our organic form may be too much detail to surmise at present.

have utterly outgrown the superstitious desire to continue on after this planetary existence has ceased. Therefore as the desire has wholly vanished they clearly espy the finality of life in the destiny of the grave. They see that men have been deceived by a delusion which sprung from ignorance! therefore nothing more need be said on the subject—there is no life beyond the pit. In the same manner others will insist that because their hearts are instinct with the desire for the continuity of existence it must needs be that they shall live on and on. They do not ask, What says Nature; what is Fact? They merely ask what is the wish that fathers the thought! They obey the wish because it pleases them.

But this is not the way to Truth. Nature asks not what man wishes or refuses. Man's desires are not the makers of Nature's laws. Yet when man discovers the secrets of Nature and formulates them in the expression of a law, there are many ill-informed who incline to the notion that the declarer of the law is the maker of the law.

The passion of science is to discover the law; its declaration may be left to others. For often science declares a law, which shall afterwards be found to be false. That is, science imagined that it discerned a certain generalization underlying a series of facts, and she formulated the law which was the expression of the generalization. Afterwards she discovered her error. That simply means that men sometimes fail in their interpretation of natural phenomena. For all humanly stated laws of Nature are but man's interpretation and description of Nature's processes.

To err therefore is not fatal. It simply means that men must gain more facts and study a deeper underlying principle.

This must be our experience in searching the truth about a potential after life, if we pursue the scientific method. If science forces the conclusion that there is no life at all beyond death; then as lovers of truth and humble students of the book of Nature we must be resigned and yield. But if Nature says that immortality is a fact and all shall live on in advancing experiences, then, too, we must accept and be contented. And if, again, Nature should divulge the fact that, there being a potential life after death, nevertheless all shall not experience it, but only those in whom the integrating energy of self-consciousness and moral integrity shall prevail through the potency of character, then, whatever be the predilection of humanity it must yield to Nature's verdict.

Now the problem is does Nature postulate, at least apparently, that if there be an after life it must be dependent on the potency of the self-conscious intensity and conservation of the human mind?

CHAPTER XXVI

"The Puzzle of the Microcosm"

In the work already referred to, the facts there assembled led me to the logical deduction or generalization that as all life is integrated in and expressed through the function of consciousness, and as the evolution of consciousness is traceable from the lowest suggestive phases in the feeblest forms of primitive life to the highest triumphs in man, the continuity of existence, if at all possible, must be commensurate with the increasing intensity or integrating energy of self-consciousness.

In the eight years which have intervened since publishing that view I have learned of no facts that would compel its revision or retraction. There is no way of comprehending or measuring the possibilities of life save by means of the physical instrumentalities or media through which it is manifest. It is impossible to apprehend life as anything else than a mode of motion revealed in amenable forms of matter.[1]

Insomuch as the analysis of the Cosmos reduces all things, at last, to the motions of ether in strains, or whirls, or waves, there seems to be no other possible conclusion, life itself being a form of activity, but

[1] Physical properties and the manifestations of life, the whole world, even, offers nothing to the last analysis but motion. . . . A single order of things now embraces life and the physical phenomena, for all the phenomena of the universe reduce to an identical mechanism, and are represented by atoms and the motion." (A. Dastre, Revue des Deux Mondes, 1898; see also Smithsonian Annual, 1898.)

that it, too, is a phase of the vibratory system of the universe.

We discover, however, that Nature apparently selects the forms of matter through which her diverse and infinite systems of vibration shall manifest themselves. We know that the identical form or phase of matter (that is the identical velocity of the vibration of her primary units) is not revealed in the soil and the seed; is not the same in inert rock or moving stream as in the leaf or flower or fruit; nor is the substance of the fruit identical with that of the trilobite or fish or bird; nor these the same as the substance that thrives in the organism of man. We may go even further and distinguish the differences existing between the various forms of matter even in a single organism; the differences resulting from the diverse demands of manifold functions.

The same quality of matter is not found in the bone as in the blood; in the tissue as in the cell; in the nerve as in the flesh; in the ganglia as in the brain. And we find even that there is a diversity of material substance in the departments of the cell itself; and in the different regions and sections of the brain.

There seems to be a co-ordination of structure and quality between the divergent stages of consciousness from the lowest to the highest. For different phases of developing consciousness different and more complex organs seem to be required. Some physiologists (especially the German school, such as Haeckel, Max Verworn, Flechsig, etc.) seem to be able to trace the evolution of the gradations of consciousness almost

from the primary atoms up to the "mental organs" of the brain in animals and man. There is not only a gradational difference to be discerned in the structure of the brain and nervous system as we ascend the scale of organic life, but there seems to be (according to Haeckel) a difference in the formation of the blood.[2]

In the gradations of what Haeckel chooses to call the "psycho-plasm," by which he designates the material basis of the capacities or properties of living organism, up to the "neuroplasm" (meaning by that term, the differentiated state of protoplasm which has been adapted to nerve activities) and on to the gray matter of the cortex of the human brain, the diverse states of consciousness and the potentialities of the mind are, apparently, physically correlated. So that as the cell-composition becomes more and more complex, the substance of which the nerves and the cells are composed, as we ascend in the scale of organic life, becomes more refined, delicate and sensitive.

"All the peculiarities of the human soul," exclaimed A. Forel, in 1877, "can be derived from the peculiarities of the higher animals." And in 1903 he improved on the doctrine by declaring that "All the peculiarities of the souls of higher animals can be derived from those of lower animals. In other words, the doctrine of evolution is just as applicable in the psychical field as in the other fields of organic life." Psychical Faculties of Ants and Some Other

[2] The blood of mammals is distinguished from that of any other vertebrates by the circumstance that its red cells have lost their nucleus by reversion. (Riddle, p. 51.)

Insects. (See Proceedings Fifth International Zoological Congress, Berlin. See also Smithsonian Annual, 1903).

Now, the distinguishing peculiarity of the higher animals is the property of self-consciousness. This phase of consciousness, has, then, arisen, by slow gradations from the similar "peculiarity" or property of the "souls" of the lower animals. And as I have said, commensurately with the evolution of the increasing intensity of the energy of consciousness there has been a development of the material substance through which it operates from simple or almost undifferentiated protoplasm to the high complexities of the cells of the human brain.

Now the problem which we are confronting is this: Let us accept the hypothesis of the mechanistic biologists, that what we call the soul and consciousness are inseparably associated with a specialized form of refined matter; which, however, may be a more delicate and sublimate phase of substance than the physical basis of life, that is, "protoplasm." Shall we then be driven to the incontrovertible deduction that as "soul" and psychic matter are one and the same, when the psychic substance disappears in the decease of the animal, then there is an end of all existence of the individual? Surface appearance would certainly make such a deduction inevitable and final.

But before we reach such a final deduction we are justified in seeking a more perfect understanding of the nature of that substance, which is known as the physical basis of life ("protoplasm") and especially the particular phases of protoplasm which are utilized

in the so-called psychic processes, namely, feeling, willing, thinking.

That there is a mystery, an uncertainty, a problem associated with this so-called physical basis of life ("protoplasm") is all too clear in biological research. There are those who seem to think that when the vital substance was discovered it solved the problems relative to the origin of life, and having learned that it is of earthly origin, and every element of mystery was detached, its destiny afforded no more philosophical uncertainty than did that of a clod of earth. But those who have entered deeply and honestly into the search are farthest from the satisfied and assured. Indeed they begin to feel that instead of having reached a simple and easy solution of an ancient problem, they have plunged into a deeper sea of mystery than they had yet encountered. "The scientific method is the mechanistic method", exclaims Prof. Edmund B. Wilson, of Columbia University in a luminous address before the American Association for the Advancement of Science; yet he hastens to disarm the self-satisfied belligerent who thinks that having thus fortified himself in science his philosophical fortress is impregnable. For he admits that we have for it "no proof whatever of its final validity."

He durst not adopt the mechanistic method as a dogma for he knows not at what moment scientific honesty may compel its denial.

Altogether more cautiously and less definitely does he, as well as Dr. Bateson and many others of the modern school of mechanistic biologists, approach the

problems involved in this discussion than does Haeckel, for instance, or Max Verworn, or any of the eminent leaders of German scientific philosophy. "The peculiar chemico-physical properties of carbon," says Dr. Haeckel, without the least apparent conscientious scruple, "are the *sole* and mechanical causes of the specific phenomena of movement, which distinguish organic from inorganic substances, and which are called life, in the usual sense of the word" (see his "Natural History of Creation" and "Riddle").

But there are those equally qualified, as eminent and successful in the same field as Haeckel, who are far from being as fearless and assured as is this distinguished leader of German thought. "We know full well," humbly admits Dr. Wilson, "that our present mechanistic conceptions of animals and plants have not yet made any approach to a complete solution of the problems of life, whether past or present. [8]

Therefore it is plain that science must make many century-strides yet, before it can feel assured that it has entered into the very inmost shrine of Nature's mystery and torn the veil aside. We do not yet know positively what life is; to know merely the substance that acts as the agent and expression of life's manifestations does not necessarily make us acquainted

[8] As a reminder on this point I here cite again this passage: "It is important for the materialist to realise that his methods of experimentation cannot be extended to touch or test things of a purely psychical nature, and it is equally important for the psychologist to remember that he has only so far been dealing with materialistic models, and studying the substructure in which mental acts occur. Neither set of philosophers, whatever their beliefs may be, can prove or disprove anything as to the existence of mind apart from matter, or what are subtle relations of mind and matter." (Dr. Moore's "Origin of Nature and Life," p. 23.)

with the actual nature and origin of life. Even the German school of mechanistic biology admits this when they go so far as to call for the conception of a special form of evolution of protoplasm which they designate as psycho-plasm. Why is not protoplasm sufficient, if it contains the potency of life? Evidently something must have transpired in the history of this protoplasm to cause it to manifest such special properties as to regard it as something differentiated from the original substance and therefore to be called by a qualifying term. And what has transpired in its history that has qualitatively affected it?

The problem at once arises whether it has been something which has been introduced into the original substance that has altered its properties and quality, or whether something inherently in it from the beginning has only in later epochs been privileged with the opportunity of revealing itself. "I have confidence that the artistic gifts of mankind," says Prof. William Bateson, in a memorable address before the Melbourne meeting of the British Association for the Advancement of Science," will prove to be due not to something added to the make-up of an ordinary man, but to the *absence of factors* which in the normal person inhibit the development of these gifts."

According to this view all the genius of Homer, Dante, Milton, Shakespeare, Aristotle, Plato and the other glorious minds that have trodden Parnassus heights, was already inherent in the original dot of protoplasm that somewhere first evinced its existence

and properties on this planet. This genius sprung from somewhere, but where or when none can tell.

This is surely a purely metaphysical hypothesis without any possible ground of proof. It reminds one of the statement that Herbert Spencer made in a conversation with Prof. John Fiske, when he said that it was impossible for the human mind to contemplate any problem of Nature without ending in a metaphysical hypothesis.

It is probably true as Dr. Bateson says that the genius of Shakespeare was once embodied in a mere dot of protoplasm no bigger than a pin's point, and that "to this nothing was added that would not equally well have served to build up a babboon or a rat." For when the impregnating sperm of life that contained Shakespeare once found physical expression, it was already Shakespeare with "the promise and potency" of all the triumphs of his genius. The only question still to be solved is where that speck of protoplasm called Shakespeare got its stuff which waxed so strong and fructified so wondrously.

It is a commonplace among biologists that the farther they penetrate into the complex structure of the cell of life the profounder and more impenetrable becomes the mystery.

"To judge by external aspects, individual development, like evolution, would seem to proceed from simple to complex; but is this true when we consider its inner or essential nature? The egg appears to the eye far simpler than the adult, yet genetic experiment seems continually to accumulate evidence that for each independent trait of the adult, the egg contains a *cor-*

responding something (we know not what) that grows, divides, and is transmitted by cell division, without loss of its specific character, and independently of other somethings of like order. Thus arises what I call the *puzzle of the microcosm.* Is the appearance of simplicity in the egg illusory? Is the hen's egg fundamentally as complex as the hen, and is development merely the transformation of one kind of complexity for another?" (Italics by the author.) Thus boldly and almost betraying his own biological belligerents, Dr. Wilson, in the address to which I have referred, stated the insoluble, or at least unsolved, problem of the ages.

In short there is a something in the living matter which not only differentiates it from all other matter in Nature, but which seems to be differentiated from the substance itself. Even the distinctive and unqualified mechanistic biologists are apparently stalled by this fact. For it will be remembered that Haeckel, as it were, cuts the Gordian knot by insisting that in order to understand the secret and potency of the vital energy we must not pause at the manufactured or structural phase of protoplasm, but must look beyond the microscope to an ulterior and more primitive phase, which is not only invisible to the microscope, but unamenable to human apprehension. In other words this thorough mechanistic materialist, and defiant monist, who scouts at hypothetical metaphysics, resorts, when driven into a *cul de sac,* to the very mysticism which he has so long scouted.[4] Haeckel

[4] This is perhaps such a surprising statement to make of Haeckel's speculations that the uninformed might be led to doubt it. I will therefore produce several quotations from Dr. Haeckel's

himself does not go the length of his possibilities, for he stops short with unstructural, unmolecular, homogeneous, ultra-microscopical protoplasm. In my "Psychic Phenomena, Science and Immortality" I have gone deeply into the investigation of the subject and shown how Haeckel has staked his reputation on the assurance of the existence of an "invisible, hypothetical structure" which "lies far below the limit of the microscopic perception" and "must not be confused (as is often done) with the microscopically discoverable structure of the plasm."

In short here is a field or plane of psychic experience, whose substantial basis seems to be undiscoverable and can only be hypothetically postulated. It is the mystical plane in which all investigators sooner or later flounder and admit the bankruptcy of their mechanistic or materialistic philosophy. It is this "puzzle of the microcosm" as Wilson calls it, this

"Wonders of Life", perhaps his profoundest and most comprehensive work, to satisfy those who may not have had their attention called to his theories.

"The organs of the living organism perform their functions chiefly in virtue of their chemical composition. . . . **This invisible and hypothetical molecular structure** must not (as is often done) be confused with the real and microscopically discoverable structure of the plasm (30). Naturally this lack of a visible histological structure does not exclude the possession of an **invisible** molecular structure. On the contrary we are bound to assume that **there is such a structure** (34). . . . In thus declaring the action of bacteria to be purely chemical and analogous to that of well known inorganic poisons, I would particularly point out **this very justifiable statement** is a true **hypothesis**; it is an excellent illustration of the fact that we cannot get on in the explanation of the most important natural chemical phenomena without hypothesis. We can **see nothing whatever** of the chemical molecular structure of the plasm, even under the highest power of the microscope; it **lies far below the limit of microscopic perception.** Nevertheless no expert scientist has the slightest doubt of its existence." (208.)

(All the boldface is mine.) Many other similar passages in the writings of Haeckel could be quoted, showing how in the last analysis of the most important problems of life and Nature he resorts to "pure hypothesis;" thus surrendering his strictly materialistic theory to simple metaphysics.

"undiscovered bourne," as we might call it, this will o' the wisp of illusion and tantalizing fascination, that has driven many of the later biologists into the ancient theory of vitalism, now almost a new school and denominated neo-vitalism, in contradistinction to the old school of Lamarck and others.

It is indeed most interesting and not a little suggestive to read the following humble confession of a great scientist who had, as I have already noted, consecrated himself to the worship of the mechanistic theory as the only scientific method, and yet stands bewildered, dumbfounded and amazed in the presence of the great enigma: "The theme that is here suggested tempts me to a digression, because of the clear light in which it displays the attitude of modern biology toward the study of living things. It is impossible not to admire the keenness of analysis, and often the artistic refinement of skill (which so captivates us, for instance, in the work of M. Bergson) with which the neo-vitalistic writers have set forth their views. For my part, I am ready to go further, admitting freely that the position of these writers *may at bottom be well grounded.* At any rate it is well for us now and then to be rudely shaken out of the ruts of our accustomed modes of thought by a challenge that forces upon us the question whether we really expect our scalpels and microscopes, our salt-solutions, formulas, and tables of statistics to tell the whole story of living things. It is, of course, *impossible for us to assert that they will.*" (Dr. Wilson's address as above.) (Italics by the author.)

It is very clear that so far as the mechanistic

hypothesis has been brought to the test of present known facts, relative to the nature, origin and complex organization of vital energy, it has run up against a stone wall. More must be learned; a deeper penetration into the complex interior of the egg or organic unit of life, must be attained before this theory can be properly weighed in the balance of facts and its validity demonstrated or proved false. And even this, the hypothetical key to the entire mystery, may prove utterly futile, for as Dr. Wilson says, it may be that the eye of man will be forced merely to run upon complexity after complexity, and at length despair as it surveys a shoreless mirage of inexplicable mystery.[8]

However, it does not seem likely that that will be the final issue as the vast mass of Nature's mysteries have one by one divulged their secrets to the penetrating mind of man in the past, and while an infinite congeries of mysteries must be expected in the encounter with Nature's problems, past experience warrants the belief and hope that each will ultimately give way as it is attacked by the scientific genius of man.

It occurs to me that the mechanistic theory will not

[8]Prof. Ray Lankester says as to this issue:
"The whole order of nature including life and lifeless matter, from man to gas — is a network of mechanism — the main features and many details of which have been made more or less obvious to the wondering intelligence of mankind by the labor and ingenuity of scientific investigators. But no sane man has ever pretended, since science became a definite body of doctrine, that we know, or ever can hope to know or conceive the possibility of knowing, whence this mechanism came, why it is here, or whither it is going or what there may be or not be beyond and beside it, which our senses are incapable of appreciating. These things are not explained by science and never can be. ("Kingdom of Man," 1907, p. 62, and London Times, May 17, 1908, taken from Thomson's "Bible of Nature," p. 284.)

need be surrendered and yet the issue, especially, as to possible future life may be unexpectedly contrary to what is now admitted.

May it not be possible that a deeper penetration into the nature of not only the vital substance (protoplasm) but that invisible, ultra microscopic plane of this substance, to which Haeckel has referred hypothetically, will divulge the secret which is now wanting in the hypothesis to make it intelligible? Let us address ourselves to this problem.

CHAPTER XXVII

Life Energy and Subtle Forms of Matter

Dr. E. B. Wilson in his "Cell and Heredity" has explained to us that the hypothesis of the natural evolution of vital energy, or life, on this planet involves also the hypothesis of the ultimate life units out of which all organic structures are evolved. Is it not apparent that until we have a better acquaintance with the nature of this ultimate unit, howbeit it is merely a guess or hypothesis, we shall be at sea as to the real nature not only of life, but of consciousness and all the psychic activities?

Although the life units, from which visible structural organic life proceeds, are invisible, and ultramicroscopical, we now know that there is, also, a plane of inorganic matter wholly invisible and microscopical, and which is detectable by no known mechanical appliance, save one. Yet its existence is not a mere hypothesis, for an actual method of detecting its existence has been procured.

While the balance and all the delicate instruments of the laboratory have failed man in his pursuit after this will o' the wisp of matter, he has found a friend in the photographic camera. By the use of that agency he can detect the existence of this plane of matter, as he can detect the invisible stars of distant stellar systems.

SUBTLE FORMS OF MATTER

In the physical field of "energetics" there has been discovered an ultra-microscopically invisible plane, where pure energy prevails, and matter has been reduced to an imponderable and immaterial substance. While the more cautious physicists admit only with hesitation that the ultimate unit of matter is purely electrical, they do not deny it; whereas the more aggressive investigators admit without equivocation that in the last analysis matter is electricity and nothing more. That is, matter is purely a plane of energy, and all we know of matter is the effect upon our senses, direct or indirect, of the dynamic energy which fills all space. . . .

In the last analysis matter, we might say, consists of a series of shooting electrons, which reach out from the core or centre of the electrons, to vast distances.[1] And these electrons are in the end but negative electrical charges. In their passage from the nucleal centre they produce certain distinctive effects upon

[1]Rutherford ("Constitution of Matter"); "We have seen that a heavy atom is undoubtedly a complex electrical system consisting of positively and negatively charged particles in rapid motion. . . . Each atom contains at its centre a massive charged nucleus or core of very small dimensions surrounded by a cluster of electrons, probably in rapid motion, which extend for distances from the centre very great compared with the diameter of the nucleus."

Sir William Crookes; "Modern Views of Matter;" "The fundamental ingredient of which . . . . the whole of matter is made up is nothing more or less than electricity, in the form of an aggregate of an equal number of positive and negative charges of electricity. . . ."

"Only the electron exists; it is an atom of electricity, and the words positive and negative, signifying excess and defect of electrons, are only used for the convenience of old-fashioned nomenclature. . . ." "The electron appears only as an apparent mass, by reason of its electro-dynamic properties, and if we consider all forms of matter to be merely congeries of electrons, the inertia of matter would be explained without any material basis." Prof. H. C. Jones: "What we know in the universe and all that we know is changes in energy. In order to have something to which we can attach the energy, we have created in our imagination, matter." ("Immateriality of Matter.")

manifest matter, among these being that of electrifying the air, so that it becomes a conductor of electricity; of penetrating solid substances, so that opaque matter becomes transparent; of photographing objects by the light of its own substances or rays, and lastly of phosphorescence.

At the present time science has been absorbed in its investigation of the various forms of energy resulting from the electrons, that escape from the decomposing atom, but, as far as I can learn, very little or nothing has been studied in the way of discovering how far this phase of energy is related to life, and whether the apprehension of the nature of electrons, and the energy they emit, may not throw a considerable light upon the subject of vitalism, psychism, the nature of thought and consciousness, and ultimately on the problem of the possible existence after death.[a]

So far as I know I have thus far been the only author who has tentatively and, of course timidly, attempted anything of the kind (see *Psychic Phenomena, Science and Immortality*). In my former work I undertook to elaborate the subject; and as it appears to be of such importance and exhibits the promise of removing much mystery from many problems I shall here again present it, with, I trust, some re-enforcement.

It is manifest that all the marvels in Nature resulting from the action of the electrons are owing

[a] Since writing the above my attention has been called to Dr. Albert Abrams' work "New Concepts in Diagnosis and Treatment," where some reference is made to the invisible plane of energy emanating from the human body. (Vide., pp. 223-228.)

chiefly to their velocity. These electrons at times attain a velocity almost approaching that of light (186,000 miles per second), although some of the rays move as slowly as ten thousand miles per second. The effect in the ether and upon different substances is owing to the impact of these small particles, moving at such a high rate of speed.

The electron itself seems to have something of the nature of colloidals; that is, of affecting other substances, without itself being affected by the action. This we know is the great distinguishing feature of the substance known as protoplasms, the physical basis of life. The electron[3] (the electrical unit) begins to manifest its energy only when the atom splits up and shoots off its electric ingredients. When the atom begins to decompose it at once transforms the chemical properties of the substance. "A body whose atoms have been partly dissociated is necessarily different from the same body before dissociation." (Le Bon.)

When inert substances enter into this colloidal state they assume properties that are almost like those of organic bodies. They succeed in changing their most fundamental properties.[3]

Now this wonderful transformation in the characteristics and attributes of these substances is owing wholly to the fact that dissociation has set in.[4]

That is, this peculiar quality of colloidal metals which makes them act in some respects like living

[3] "They take on properties so intense and peculiar, so different from those which they possess in an ordinary state, that we can only compare them to certain organic compounds called diastes." (Le Bon.)

[4] "In my opinion the metal is found in the state of matter that has suffered the commencement of dissociation." (Le Bon.)

bodies, strangely affecting other substances without themselves being affected by the results, being extremely sensitive, and subject to the effects of toxins or poisons, even to that of disease and death — all this, according to this investigator (and I believe never disproved by any other) is owing to the fact that in such metals the atoms are splitting up and the electrons are being released so that they shoot out with their tremendous velocity.

Manifestly the strange result must be the effect of the internal impact of the shooting electrons upon the structure of the substance. In short, because of the escape of the electrons from the atom, inert matter is able to take on some of the qualities of living matter. Here at once is a remarkable and most suggestive fact in connection with what is now known as the dissociation of matter. It is also to be noted that this quality, namely the colloidal, is a distinguishing feature of protoplasm, or the substance known as living matter.

From the experiments, then, conducted on inert metals, in which colloidal results have been procured, wherein it is shown that they follow from the decomposition of the atomic unit, it must follow by analogy that the same result is attained in protoplasm, or living matter, because of the same circumstance or condition, namely, the decomposition of the atomic unit of which the protoplasm is composed.

It seems, then, clear that, as protoplasm is characterized by colloidal properties, and as such properties result only from the decomposition of the atom (at which time radio-active energy is released), there-

fore, radio-activity must be a characteristic energy of protoplasm.

If we keep clearly in mind that radio-activity consists in the release of millions of infinitesimal electrical particles, called electrons, from the atom when it is breaking up, then we may imagine that living matter is continually in this state of ceaseless disintegration or internal bombardment.

Minute, almost incomputably infinitesimal particles are hypothetically shooting forth from the nucleal core of the protoplasmic unit, and thus generating around it the tremendous energy known as radio-activity.

Will the chemical science of the future discover that this energy (thus generated internally in the dissociation of the essential unit of living matter, protoplasm) is the real source of life itself, which in inorganic matter reveals itself with peculiarly constituted powers? It would seem that modern laboratory experimentation is leading in this direction.[8]

[8] "There exists a whole territory of approach between the inorganic and the organic in what is known as the chemistry of the colloids. . . . The study of the colloids has not only had profound effects upon our philosophical conceptions of chemistry; it is producing enormous changes in many fields of industry, for colloids are amongst the most important of the chemical substances utilised by civilised man, and in the future the study of the colloids found in living structures will revolutionise our knowledge of biology and physiology, and cause astounding advances in the applied medical sciences." (Moore's "Origin of Nature and Life," p. 18, 19.)

This author also quotes Thomas Graham as saying: "The colloid is in fact a dynamical state of matter; the crystalloid being the statical condition. The colloid possesses Energia. It may be looked upon as the probable primary source of the force appearing in the phenomena of vitality." (p. 19.)

"The importance of these slow energy changes in colloids, ... giving rise to phasis variations in the energy processes of the living cell, are only now somewhat tardily receiving the attention and the further study which they so richly deserve. Many of the hidden wonders of the cell life undoubtedly are clustered around the relationship of the colloid and the crystalloid." (pp. 157, 158.)

But first we must call attention to another vital characteristic whose similar existence in brute matter or inert metals is at least suggestive. I refer to the fact of phosphorescence.

Phosphorescence is a quality of matter that gives out strong white light, shines brilliantly, without the presence of heat (that is, without combustion). This seems to be a characteristic that reveals itself always in the decomposition of the atom when radio-active energy is generated.

When in 1879 Professor Crookes first stood amazed before a vacuum tube through which he had passed an electric charge of a very low pressure he was witnessing a scene that has revolutionized modern physics, dynamics and chemistry. He saw a stream of daintily colored particles flowing through the vacuum with such startling velocity that it took nearly a quarter of a century to determine its nature. It was proved as Crookes had originally surmised that "the rays consisted of a stream of negatively charged particles traveling with enormous velocities from 10,000 to 100,000 miles a second. . . . In addition it was found that the mass of the particle was exceedingly small, but one eighteen hundredth of the mass of the hydrogen atom, the lightest atom known to science." (Rutherford.)

Now, as to the phenomenon of phosphorescence. "These (Crookes') rays excited strong phosphorescence in many substances in which they fell and also produced marked heating effects."

Without, for the moment, dwelling further on the fact of phosphorescence as a phenomenon accompany-

ing that of the disintegration of the atom, or the presence of radio-activity, I wish to emphasize the fact that phosphorescence seems to be a special and fixed characteristic of protoplasm or living matter. Now this would seem to be a further proof that there exists within protoplasm a condition of atomic dissociation, or bombardment of myriad particles of infinitesimal diameters.

In my "Psychic Phenomena, Science and Immortality" (pp. 66-71), I have aggregated numerous illustrations and facts to show that phosphorescence probably is a constant phenomenon accompanying protoplasm. It would therefore possess the second distinguishing characteristic of radio-activity, or the phenomenon of the disintegration of the atom, that is, the internal bombardment of carelessly impacting particles of negative electricity.

Now it is an accepted fact that the implements of the chemical laboratory — the salt solutions, the scalpels, the balances, etc. have never been able to detect the illusive secret of the nature of life. I have already cited the assertion of Dr. E. B. Wilson to that effect: "It is the puzzle of the microcosm". . . . "once within we are stalemated with respect to the origin and the early history of life."

It would seem that there are no chemical reagents that enable the scientists to detect and run down the real truth about the origin and nature of protoplasm. While the chemical elements which enter into protoplasm may be detected, the why and the wherefore, the real law which compels the union of these chemi-

cal elements to generate life is not yet discovered, and seems far away from discovery.

Perhaps the hint of Le Bon may be as true relative to the problem of the life unit as it claimed to be true relative to the reactions that occur in radio-active substances when dissociation of the atom begins. He insists that "Ordinary chemistry touches only the structures formed by atoms and modifies them at will. . . . The intra-atomic chemistry of the future will attempt the study of the phenomena which take place within the atoms."

He, with many others, is now claiming that the old formulas, and solutions and microscopes and statistics of chemistry are utterly valueless in the greater and far more profound discovery which is yet to be made, if we are to understand the worlds of wonder that lie discoverable within the potency of the atom itself. "Reactions having for their probable origin beginnings of atomic dissociation suffice to give bodies *absolute novel properties* which none of our chemical reagents can detect," says Le Bon ("Intra-Atomic Energy"— Smithsonian Annual, 1903, p. 284), "and which were revealed only when new phases of physical investigation were discovered."

Now the two startling characteristics to which Le Bon refers as transformations in the properties of matter when subject to atomic disintegration are *colloidal attributes* and *phosphorescence*. The fact to which I here attempt to call attention, and again emphasize, as I did in my former work, is that these properties are also the very two puzzling and startling characteristics or properties of living matter,

and which have thus far refused to submit their secrets to the keen minds of investigators.

Are we then correct in assuming that the real state of protoplasm or living matter is one of radio-activity or atomic disintegration, which would mean that it is ceaselessly releasing streams of infinite particles, electrical in nature (electrons), which activate the functions of the vital substance, and as I shall try further to show are probably at the basis of consciousness and all the vital forces?

Is it not probable that this is the field of the hypothetical, ultra microscopical plane of protoplasm, referred to by Haeckel? It is from this fact that I have ventured to deduce what I might call the electronic theory of life and thought, which I think, if true, would bear very strongly on the problem of the after life, and especially lend itself to the explication of the many confusing psychic problems in human experience.

CHAPTER XXVIII

The Electron Theory of Thought

For some time it has dawned on many thinking minds that thought is not something mysterious and supernatural in origin but really a force or energy much like other planetary forces. It is a dynamic principle. It affects results; it accomplishes work. If we could understand more of the nature of this force, of its method of activity and its permanent effect on this life and a possible life hereafter, it might add much to human information and earthly possibilities. This venturesome effort I shall now undertake.

That thought is some kind of energy closely allied to a complex form of matter seems now to be admitted by physiologists. The cell, by some, is regarded as an electro-magnet and thought, electro-magnetic energy. The very seats in the brain, especially the gray matter of the brain, constituting the various thought-centres, are also claimed to have been discovered by some authorities. And in these seats of thought the energy is released which manifests itself in what we call the process of thinking. The energy, thus expended in thought, is generated in the living matter of cell.

"This much at least is certain," says Dr. Andrew Wilson, "that the *living matter* of the brain cells is the *seat* of those particular changes and actions aris-

ing from the play of the nerve force, which can be converted into force or energy of other kinds. . . . We have thus arrived at the conclusion that the brain cell is the seat of those actions or processes which are generally spoken of under the name of thought or consciousness. ("Physiology of the Human Body," p. 110.)

The organization of the brain and the nervous system is so constituted, we are assured by authorities as we have already noted, that they are meant for the conveyance of vibrations, only, and not for the carrying of any substance whatever.

Just as electric wires are contrived only as a medium for the conveyance of the electric current and its conversion into some other form of energy in practical application; so the brain cells and the fibres and nerves are a complex organization for a similar purpose, namely, the conveyance of energy over the nerves to the muscles, where they are converted into actions, or through the specific brain centres where the vibrations are converted into thought and consciousness.[1]

The brain cell, then, in certain of the cranial centres, is the generator of thought; that is, within this cell, certain energies are at play which originate only in the *living matter of the cell,* and become manifested in our psychic activities.

The point that is of particular importance to us in this discussion is that this form of energy is generated in the *living matter of the cell,* that is, in the

[1] "Here it would seem that we stand on fairly firm ground, assuming that the brain cell is a generator of that particular kind of energy, to which in one of its manifestations, at least, we apply the name of 'thought.'" (Dr. Andrew Wilson, p. 111.)

pure protoplasm, which in the last analysis we have already seen is not the detectable, microscopical substance commonly known by that name, but an ultra-microscopical, hypothetical and invisible element residing in the undiscoverable depths of protoplasm.

This is the hypothetical chemical plane of vital substance as already stated, wherein because of the disintegration of its ultimate units there is a constant emission of electrical particles or radio-activity. Is not the kind of energy, then, generated in the brain cell, to which Dr. Andrew Wilson refers, to be regarded as radio-active? In the last analysis, thought apparently may be regarded as a phase of radio-activity, and so construed would lend itself to the explanation of many of the puzzling phenomena in the psychic experience of mankind.

Thought thus construed would have to be recognized as an energy or force of a very powerful character. It is quite possible that we might here discover the plane of electro-magnetism, where the psychic processes are always at play, that very plane which Soddy told us we are almost wholly incapable of realizing, any more than a fish can realize the air. Therefore we are puzzled when any of the phenomena of this realm manifest themselves obectively, and things occur that we cannot understand. Here, may it not be, lies the secret of those strange phenomena, that have so long either been denied as possibilities or relegated to the supernatural because nobody could explain them.

If we once understand that the form of energy which is released in thought and consciousness is

identical or similar to that known as radio-activity, and recognize the marvels of this energy when released in the physical world, we shall perhaps be able to apprehend the source of the phenomena called psychic, which operate in a field outside of consciousness.

What is called radio-active energy is electrical in Nature; it consists of the ceaseless expulsion of myriad streams of electrons from the atom which is breaking up. May it not be possible, then, that the electron theory of thought will show that thought operates in a field of electro-magnetism? As Soddy says: "A charge of electricity, or electrons at rest, has no *magnetic* properties. A *current* of electricity, or the same electrons in *motion* has." ("Matter and Energy," p. 172.) (Italics by the author.)

From certain psychological laboratory results which it is claimed (as I shall shortly show) have been obtained, such as the alleged scientific photographing of objects by thinking of them, and similar results which the chemical laboratory have secured through physical agencies, it would seem to me that there is marked evidence at hand, that a thought is really a process of radio-active action, or a ray of electrons in motion. Not to anticipate, if it can be shown that a substance which emits radio-active rays can by those rays cause the photographing of an object covered by a black cloth, or through an opaque surface that absorbs light (and this experiment has been scientifically demonstrated beyond all dispute); and if it can also be proved, as it is claimed, that the mind is capable of securing the photograph of a physical object, merely by strongly thinking of it, even when that object is buried under a black cloth; then

manifestly the result in each incidence must be the effect of the same or similar form of energy.

A ray of some kind (that is, a stream of invisible electrons) must emanate from the mind or will, when contemplating an object, if it is photographed by thought. As in the chemical experiment that ray is not luminiferous, but emerges from a metal that is radio-active, so it would seem to follow that the brain cells, too, are radio-active, or at least emit a rare and extraordinary form of energy, and by means of the invisible rays of the cells the photograph is secured.[a]

I give at this juncture merely the hint of what I am attempting to show as to the possible electronic nature of thought and shall soon return to it for more elaborate presentation.

And further if the electronic theory of thought should be found to be true, namely, that thoughts are electrons in motion, then manifestly the entire zone of mental action, by the definition of Soddy, must be magnetic, or electro-magnetic in nature. From this fact, in the psychic realm, I believe a world of revolutionary deductions can be made.

It is not to be overlooked that we are led to this supposition through the deduction already presented, that the living substance of the human organism, protoplasm, contains radio-active energy, evinced by its colloidal and phosphorescent properties. Therefore the brain cells must of course be activated by the same energy.

[a] Dr. Larkin of Mt. Lowe Observatory doubtless is correct when he says the word photography, applied to these phenomena, is erroneous. "Photos" means light and "graphe" writing, both Greek words. But the graphs or pictures were not taken by light.

All authorities in Physics and the Science of Electricity acknowledge the phenomenon of the accompaniment of phosphorescence with the emission of radio-active energy. But I know of none who has applied the manifestation of the phenomenon to the laws and potency of protoplasm. I am taking the hint set out by Le Bon that the phenomenon of phosphorescence always takes place when the atom explodes and emits its streams of electrons (that is, rays of radio-active energy). The existence of phosphorescence and radio-activity are concomitant. Where radio-activity exists there is phosphorescence; and where phosphorescence is manifested there we have the phenomenon of radio-activity, resulting from the disintegration of the atom.

Therefore as protoplasm is admittedly accompanied by a phosphorescent illumination, would it not follow that it is activated by radiant energy? In short, the energy that is inherent in the protoplasm, which exists and functionates on the invisible plane *antecedent to the vitalistic phenomena,* which are the properties of protoplasm, is apparently radio-active. Is not this, then, the ultra-microscopical, and hypothetical chemical plane of activity, which actuates the protoplasm, and which is primarily responsible for the properties of vitalism?

Haeckel and others, I have already stated, admit the existence of this plane of ultra-microscopical energy, but they call it hypothetical, merely declaring it must exist for logical reasons.[8]

[8]Dr. Leonard Thompson Troland, says in "The American Naturalist," (August 1917) "It has for some years been my conviction that the conception of enzyme action, or of specific

However, if we discern the fact that protoplasm is actuated by radio-active energy, which is the result of the disintegration of the ulterior protoplasmic unit, namely the atom, then we have reached a plane in the history of protoplasm which places it at the culmination of the analysis and evolution of inert matter. It removes protoplasm from any mysterious association or metaphysical antecedence, by putting it on a common plane with all cosmic matter;[4] and merely suggests the fact that when radio-activity functionates in vital substance, that substance acquires properties which are wholly different from those of all other forms of matter. But this is no more mysterious than is the fact that when this same phenomenon of radio-activity takes place in gross matter it creates properties in such matter that are utterly contradictory of its ordinary and historic characteristics.

catalysis, provides a general, definite solution for all the fundamental biological enigmas; the mysteries of the origin of living matter, of the source of variation, of the mechanism of heredity and ontogeny, and of general organic regulation. . . . It is an answer, moreover, which links these general biological phenomena directly with molecular physics, and perfects the unity not alone of biology, but of the whole system of physical science, by suggesting that what we call life is fundamentally a product of catalytic laws, acting in colloidal systems of matter throughout the long periods of geologic time. . . . This view implies no absurd attempt to reduce every element of vital activity to enzyme action, but it does involve a reference of all such activity to some enzyme action, however distantly removed from present activity in time and space, as a necessary first cause. Catalysis is essentially a determinative relationship and the enzyme theory of life as a general biological hypothesis, would claim that all intra-vital or 'hereditary' determination is, in the last analysis, catalytic." . . .

Ostwald defines a catalytic agent as "a substance which changes the velocity of a re-action without itself being changed by the process. In the older terminology of the pioneer Berzelius, it is 'a substance which, merely by its presence and not by its affinity, has the power to render active affinities which are latent at ordinary temperatures.'" (Also quoted in "The Literary Digest," August 25, 1917.)

[4] Dr. Moore seems to hint this fact in the following statement: "The brink of life lies not at the production of bacteria and protozoa, which are highly developed inhabitants of our world, but away down amongst the colloids, and the beginning of life was not a

This seems to be a field of study that promises a real discovery; namely, that protoplasm is a product of colloidal or radio-active energy, and being such the secret source of its marvels may soon be discovered, to the extent of divulging the origin of the energy by which such marvels are made possible.

This discovery would not only remove much from the mystery of vitalistic phenomena, and reveal the ulterior source of structural and microscopic protoplasm, but it would establish a ground for the theory that thought and consciousness, or the higher functions of protoplasm within the complex nervous organism of living animals, are actuated by the same energy, and thereby prove the dynamic principle of thought or ideation, and lend themselves to the further explanation of the confusing phenomena which are exhibited on the psychic plane.

If the secret power of thought and consciousness, no less of sub-consciousness, be the radio-active energy, that lies at the core of the universe, then we have a far reaching principle or law which may enter into the plane of these mysterious activities and very largely explain their source.

Utilizing the principle of the radio-active or electron theory of thought and consciousness, accompanied with the probable truth that these activities

fortuitous event occurring millions of years ago and never again repeated, but one which in its primordial stages keeps on repeating itself all the time and in our generation. . . . The fact that the present basis of the system of living creatures in the world is light energy, leads to the view that at a certain stage in the development of the colloids, probably long before the appearance of chlorophyll, the colloids began to be affected by the light, and acquired the property of retaining and utilising light energy for the further development of structure, or, in other words, synthesis of more complex colloids." ("Origin of Nature and Life," 191, 192.)

are exercised in an electro-magnetic plane of matter, we may easily investigate every one of the phases of so-called psychic phenomena with the assurance that they will probably lend themselves to the final explanation of this far-reaching hypothesis.

I believe that the further investigation and test of this principle in connection with the marvellous claims made by spiritists and psychics will show that they bear no relation whatever to the world of spirits or anything contrary to the discovered laws of matter, but are amenable to the same planetary laws of existence. All this I have attempted in detail in my former work, already often referred to in this treatise.

But what I am emphasizing here is the fact that what I have set forth in the present treatise is more positive and confident, more in the nature of a probable discovery, than what I felt assured of when I wrote the former work. For, once we establish the truth that thought is a form of radio-active energy and functions in an electro-magnetic plane of matter, then we have principle enough to show how all the wonders of so-called psychism may take place, without in the least referring them to the agency of supernatural beings or spirits. At least until the hint here presented is fully tested with relation to these phenomena we are not justified in looking elsewhere for their origin.

This analysis and theory of thought would lend itself likewise to an explanation of the human will. It would be found that a thought or an idea entering the brain, certain groups of cells will organize as a

frame for it and streams of electrons will rush from those cells to activate the nerves that lash the muscles into action. That is, a distinctive form of energy would eventuate that we call will-power, or volic energy.

Naturally this interpretation, if true, will enable us to understand and explain what is called thought-transference or telepathy; for that would be nothing more than the action of the electrons surrounding an idea sweeping from one brain to another and assembling in the second brain the similarly located cells that would awaken in it the identical or similar idea that proceeded from the first brain.

The theory would explain thought as dynamic and thus explain so singular a phenomenon as stigmata which sometimes occurs spontaneously but may also be caused by Hypnotism.

There are authentic cases on record of certain nuns having been so enamored of the Christ, and thus gave their lives in such devotion to the worship of the crucifix, that upon their breasts were formed actual red reproductions of the cross, which have been called stigmata.

Now in the case of the nun, during the days of ignorance, because no better explanation could be found, it was assumed that the effect was purely supernatural and an answer to her devout prayers. But insomuch as this same condition can be caused in the clinic by the suggestion of an hypnotic operator, it becomes manifest that the phenomenon is not at all supernatural, but the result of a partially known cause. However, merely to say that the effect

is mentally produced is really hardly an explanation. For we have no way of understanding how the thought of a hypnotic operator can create such a physical and objective result, unless we know more of the nature of thought.

Now, I contend, that the electron theory of thought makes such a phenomenon easily understood. For if thought is an energy of radio-active quality, and operates in a field of electro-magnetism, then it is endued with that specific dynamic property that would enable it to manifest itself in the manner described. The idea or thought if sufficiently strong and clear would carry a stream of electrons toward the object contemplated, and the result would follow. The nun, becoming so absorbed in the contemplation of the crucified Lord, so clearly in vision realizes his agony and physical condition that the idea of crucifixion fixes itself in expression upon her own breast.

Psychological fiction through the genius of Hawthorne has been made the instrument of conveying a picturesque portrayal of this rare experience in human history. In his "The Scarlet Letter," when Rev. Mr. Dimmesdale who is secretly guilty with Hester Prynne of the greatest sin in the Puritan's eyes, makes his sensational confession, Hawthorne has him speak as follows: "There stood in the midst of you one at whose brand of infamy and sin you did not shudder. . . . It was on him," he continued in a kind of fierceness, so determined was he to to speak out the whole, "— God's eye beheld it. The angels were forever pointing at it! The Devil knew it well and fretted it continually with the torch of his burn-

ing finger! . . . Now at the death hour he stands before you. He bids you look at Hester's scarlet letter. He tells you that with all its mysterious horror, it is but a shadow of what he bears on his own breast, and that even his own red stigma is no more than the type of what has seared his inmost heart. Stand any here that question God's judgment? Behold a dreadful witness of it!"

With a convulsive motion he tore away the ministerial band from before his breast. It was revealed! . . . . Most of the spectators testified to having seen on the breast of the unhappy minister a SCARLET LETTER — the *very semblance of that worn by Hester Prynne* IMPRINTED IN HIS FLESH. As regards its origin there were various explanations. . . . Some contended — and those best-able to appreciate the peculiar sensibility of the minister and the *wonderful operation of the spirit on the body* — whispered their belief that the effect of the ever active tooth of remorse, *gnawing from the inmost heart outwardly,* and at last manifesting Heaven's dreadful judgment by the visible presence of the letter." etc.

I have italicized certain passages to indicate how excellently Hawthorne, even so many decades ago and long before the new psychology had an existence, suggested the true reasons for the frightful experience of the minister which revealed itself physically in so sensational a manner.

Modern psychology shows Hawthorne was correct in his intimation that it was the inward remorse gnawing outwardly which caused the blood to print in red letters on the minister's breast the identical duplicate of the letter on Hester's breast. It was the gnawing of remorse; that is, the ceaselessly painful contemplation of the red letter on her breast subcon-

sciously suggested to him that he, equally guilty, should be shamed as well as she, and wear, too, the same letter of infamy. As we say in psychological terms it was the physical manifestation of the mental suggestion; an exhibition of the motor power of ideation.

But does that fully explain it? Is it not necessary that we go further and discover what instrument, that is, what physical medium, the motor power of ideation, or the action of suggestion, utilizes in producing the marvellous physical effect?

CHAPTER XXIX

The Dynamic Energy of Thought

It is impossible to understand how an idea or a thought can act in a vacuum. There must be some sort of material medium through which a thought operates to affect a physical result. It is right here where such a theory as that of the electron-theory of thought becomes efficient to explain the mystery. If the thought is embodied in a stream of electrons, pouring forth with persistent energy, we can conceive of such a stream, organized in the mould of a red letter, "A," forcing the blood outwardly from the veins and, by friction upon the flesh, reproducing the red letter on the breast of the minister. Some physical medium must be discovered, which is operating coincidentally with the action of the mind, to make the psychological law of "suggestion," hypnotism, etc., intelligible. Unless thought is substantial, embodied in some form of matter, we cannot understand how it moves, acts or works.

We will at once appreciate the difficulty if we contemplate the force of electricity. For a long time it was regarded as a fluid or current of some mysterious substance; but more recently it was defined merely as a mode of motion. Science temporarily paused, satisfied with such a definition. Nevertheless the mind was unsatisfied; for if electricity is a mode

of motion, there must be something in which or by which it accomplishes its movement.

Not till the discovery of the electron was there an approach to an intelligent definition and understanding of electricity. It was merely accepted as a mystery and let go at that. It is even now the stock-in-trade illustration of the theologian when cornered and asked to explain the mystery of the soul, God, etc. . . . He says that these mysteries are no greater than that of electricity and science accepts such a mystery as a matter of course. But Science, nor even the human mind, ever rests satisfied with mystery as the goal of investigation. So when the electron was discovered, the mystery of electricity was to that extent unveiled, and now electricity is recognized as a stream of shooting corpuscles or electrons, whose energy is determined by the degree of the velocity of the stream. There is no vacuum in Nature. Crookes learned that, when he directed a current of electricity through a vacuum tube, reduced to the millionth of an atmosphere, and beheld the marvellous revelation of the flying corpuscles occupying the vacuum!

As electricity does not operate in a vacuum but must be clothed with some substance; so must it be with thought, and the mental energies. They too must be substantial and act through matter. Of course they cannot be supposed to be embodied in the coarse substance of the flesh or even the microscopic cell, except indirectly.

It seems to stand within reason (having already shown, by the indication of the colloidal nature of the living matter of the cell, and by its phosphorescent

character) that this living matter must be radio-active, and that therefore the cells of the body are surrounded by this rare substance known as "radiant matter." This consists as already said of shooting rays of electrons of various velocities and penetrating all substances. If this be true, then we can understand how a thought or volition moves in the action of the stream of minute particles. This theory would explain the manner in which thought as a mode of motion operates as well as electricity.[1]

Naturally there are some difficulties connected with the theory but if it is true these will in time doubtless be overcome.

In the same manner the theory may lend itself to the explanation of clairvoyance. This is still a mystery and an attempted explanation only has been given out by calling it telepathy. But telepathy must be scientifically accounted for as well as clairvoyance. I will recite here an interesting case of clairvoyance which was narrated to me by a southern friend to show how the theory may explain it.

My friend had been corresponding with an intimate friend of hers and had completed arrangements

[1] Might not this theory tend to explain the modern operation in the generation of such phenomena as vouched for by Dr. Lucien Larkin which he describes in an article. He claims to possess a vivid graph of an iron ring, a brass clock wheel with cap, and a 50-cent silver coin, taken in total darkness by radium ore from a Nevada mine. A sensitive photographic plate, new from factory, was wrapped, in a dark room, in heavy black paper. The powdered ore was sprinkled over another paper and then was laid on top of the ring, wheel and coin, keeping these between ore and plate. The whole was placed in a black box. After a few days the plate was developed and intense negatives appeared. "The Baraduc and Darget graphs were secured when the subjects were swayed by varying emotions, in calm, peace and serenity and also when in anger. This is a whirl around the head; an actual brain storm."
I am not quoting this as scientifically authentic — but merely what it may be worth as a suggestion.

for a visit. She had been expectantly awaiting the hour of her arrival, having set much importance on the visitation she had so much desired. Her friend had told her that she would arrive on a certain day and all day long she sat waiting for her arrival; but great was her disappointment not to see her at all. She concluded the plan had been in some way upset. So she strolled out on the roadside in the dusk of the evening when, to her tremendous amazement, she did indeed see her friend approaching, but, strange to say, she turned hastily into a lane and then disappeared. My friend ran quickly to find her but could not. One thing in particular, however, she observed in the moment's glimpse of her friend. She was clothed in a brilliant red suit; a garment she had never seen her clad in, and it was very attractive. She of course could not understand the seemingly insane performance and awaited an explanation of the sight which had so pained her. In a day or so came a letter from her friend telling her how greatly disappointed she was because of the interference with her plan and the impossibility of making the visit.

Then my friend was more confused than ever and wrote explaining to her what she now knew must have been an apparition she had witnessed on the day her friend herself was to arrive. She spoke especially of seeing her in a beautiful red gown, a style she had never known her to wear.

Then came a letter from her friend telling her that indeed she had that day worn such a dress and had been expecting to surprise her, knowing how much she liked pretty apparel, etc. The secret was out! My

friend had really seen her intended visitor, only she came in a mould of substance that was surely not of the earth earthy. Of course she had seen her spirit; in short she had had a clairvoyant vision.

To explain this by merely saying that it was a telepathic vision transmitted from the mind of the proposed visitor to the mind of my friend, which, under the peculiar strain of expectancy, was especially intense, and therefore visualized itself in apparent objective manifestation, is, indeed to explain by an explanation that demands an explanation. For the reason at once demands an understanding of how the thought could be so transmitted.

On the basis of the electron theory of thought a legitimate and scientific explanation could be established. For if thought is conveyed, perhaps like electricity, in streams of electrons that radiate from the human brain, they might be carried forward to other brains and, as by impact, compel in the recipient brain the grouping of cells similar to those in the transmitting brain. By this the thought or idea would be visualized to the latter mind as well as to the former. So called table turning, spirit photography, and the multitude of alleged psychic phenomena can, it seems to me, be thus naturally explained as the result of a law now discovered. As I have elaborated this subject in great detail in my "Psychic Phenomena, Science and Immortality" I will use no more space here but refer the reader, if interested, to that work.

CHAPTER XXX

Thought Photography and Spirit Identity

I have already referred to the possibility of thought photography. If it be true that it has been actually demonstrated as a scientific fact, as seems to be the case with the work of Commandant Darget, then we may speak of thought photography as a real phenomenon; although if it be merely yet an undemonstrated possibility, nevertheless it is legitimate to study whether there are any laws in Nature that lend themselves to such a potential phenomenon. And it occurs to me that the very theory I am attempting here to propound, the electron theory of thought, immediately lends itself to such an explanation. If science is already admitting the possibility of thought photography then it is close upon the track of the actual nature of thought itself. According to the interpretation of the electron theory, thoughts would, indeed, be discerned as things. If they are things they must be capable of analysis and apprehension.

Physicists have explained to us that the recently discovered energy known as radio-activity, while at first thought to be generated alone in radium, which is a very rare and expensive article, is now actually known to be one of the commonest of all the forces in Nature. We learn that around every inert and organic body of matter there is a charge of radio-active

energy, which, though, of course invisible and not even detectable by the chemist's delicate balances, yet is one of the most penetrating and intense of all natural forces. It is, indeed, "radiant matter," as Crookes has called it, though really without any of the properties of ordinary matter, except mass, but possessing properties, as I have already stated, completely contradictory to those of gross matter. It consists of small electrical particles, nearly two thousand of which are needed to compose a single atom of hydrogen, the lightest of all the known chemical elements.

Yet invisible, imponderable and impalpable, as they are, they are subject to the magic grasp of the photographic plate. Indeed it was chiefly through the aid of the camera that scientists came to realize their existence and possibilities.

A celebrated Frenchman has performed wonders with them, within the camera; such wonders as are more amazing than any of the alleged marvels of spiritistic seances.[1]

Now by hypothesis this marvellous "radiant matter," these electrons, not only surround all the external objects in Nature, but they move round the brain cells and sweep down the nervous wires through the human organism. We might therefore in imagination almost picture to ourselves the form of a thought. Just as when you plunge a string in a solution of salt the string will speedily be surrounded by crystals that cling to it when dried, and may thus be seen; so every cell and nerve in the human system

[1] Vide Le Bon's "The Evolution of Matter." Passim.

is, hypothetically, surrounded by these minute, wonderful electrons; and especially the cells of the brain. For here the highest degree of energy is released, as the brain must function in all the body's activities.

Now, we have been heretofore supposing, that in the act of thinking or in any state of consciousness we utilized the specialized group of cells devoted to the function. But we are beginning to understand that in the thought-process we are utilizing a much more refined and sublimate substance than that of the minute cells.

The mind, by this hypothesis, does not act directly on the brain and the cells and the nerves, but on a much finer substance. The action of the will is exercised directly through the medium of "radiant matter," or streams of electrons, a substance which exercises tremendous energy on the coarser and less responsive substance of the microscopic cells.

When a bell strikes we hear a sound; but the sound does not pass directly from the striking bell to the ear; it passes through a stratum of ether, and it is the vibrations of the ether thus energized that effect the tympanum, and cause us to hear.

Thus, likewise, when we think or exerecise the power of the will, the thought or volition does not by our hypothesis directly affect the nerve or brain cell; what the energy of our thought and will does is first to set up particular groups of vibrations among the electrons that surround the nerve and the brain-cells and through the energy thus directed causes the functioning of the muscles and the organs. By this hypothesis the will-energy resides and moves in the

body of electrons or radiant matter that surrounds the cells and nerves.

By our hypothesis thought is the energy of an idea taking specific shape among the myriad electrons that surround the brain cells. A thought then would have shape, form, figure — "a local habitation and a name." It is not only a "thing," but it is an appreciable and apprehensible object; not opaque, it is true, not visible, not even microscopically detectable. Yet it is actual.

But how is it possible, it will be asked, if these electronic forms are actual, that they cannot be detected? I have not said they cannot be detected; I said not "microscopically detectable;" for indeed they can be detected. While they are beyond the apprehension of all known chemical instruments, there is one indeed to which they yield, and that is the plate of the photographic camera.[2] Physicists have demonstrated the fact that the aura of electrons, which surround material objects, can actually be seized by the camera.

Just as invisible stars can alone be detected through photography, so this impalpable and invisible auric environment of physical substances can be caught only on the photographic plate.

Now does it not stand to reason that if these aura on external objects can be seized in the camera, then some process should be capable of invention whereby the auric environments of the brain cells (that is, the shapes and figures of thought which we have just sug-

[2] I do not refer here to the detection of individual electrons, a feat which has been, I believe, accomplished by Professor Millikan in observing an electron coursing down a globule of oil. I refer to the groups and aggregation of electrons in specific forms which are discovered only by the camera. (See "The Electron" by Robert Andrews Millikan.)

gested as actual in the brain centres) can also be caught and retained in the camera? And this it would seem is the actual explanation of the manner in which the photographs of thoughts can be taken.

But let us extend the possibilities of our hypothesis even further. If it be true that thoughts are actual things, that is (if I may so put it at once) actual figures composed of "radiant matter," and these supposedly can be photographed within the brain, why would it not also be possible to detect and photograph them outside the brain?

Is there any scientific reason for us to believe that thoughts, when full formed may, to put it vulgarly, walk outside the brain and, for at least a brief space of time, maintain their integrity? This is a problem which will some time be tackled by competent scientists and finally solved. Meanwhile let us see how far present experiments have led toward its solution.

By the hypothesis I have thus far stated, thoughts, being forms composed of electrons or radiant matter, manifestly do move from one brain to another, for we have the demonstration in hypnotism of mere mental conditions of the operator affecting the conditions of the subject without the assistance of any physical agency.

In such experiments it is manifest something passes from the brain of the operator to that of the subject. By our hypothesis what passes is the stream of electrons, organized into a formal thought, between the two brains. It is the passage not of a mere epi-phenomenon, a mere imaginary being, an inexplainable spiritual something; but it is the passage of a sub-

stantial actuality, an organized body, something as actual as a ray of light that is generated in the luminiferous ether or a current of electricity that leaps between synchronous batteries. It is not a mere figment of the imagination; but it is an actual reality.

Now, if, by hypothesis, the radiant figure (a thought) can be photographed in the brain, then, as by hypothesis, when a thought is telepathically communicated, it means the passage of the actual form or figure of the thought outside of the conscious brain, why could not such a thought-form be photographed in the passage? Such a photograph would, of course, be what is now regarded as a spirit photograph, and which has so long been utterly denied, as a possibility, or accepted as a supernatural phenomenon.

Such a story for instance as here follows, though I am not sure that it was ever scientifically verified, would be, if interpreted by my hypothesis, not a supernatural manifestation, but a simple, natural phenomenon, easily explained by the principles of science. This story was sent from London by cable March 20th 1916 and printed in the American papers March 21st. I take my record from the N. Y. Times of that date.

"SPECIAL CABLE TO THE NEW YORK TIMES

LONDON, March 20, — The claim to have photographed a ghost is made by the Rev. Charles Tweedale, Vicar of Weston, Yorkshire, in an affidavit made before the Commissioner of Oaths, which is supported by Mrs. Tweedale and their son. Mr. Tweedale, who a few years ago attracted attention by reports of psychical phenomena at the Weston vicarage, told the correspondent of The Yorkshire Post that on Dec. 20 last his wife, their son, and himself were at luncheon

about 1:30 o'clock in the afternoon when suddenly his wife cried out that she saw the apparition of a man, with a full head of hair and beard, standing at the other side of the table to the left hand of their son.

Mrs. Tweedale directed attention to the figure, but neither the vicar nor his son could distinguish it. Crying out hastily to his wife to keep it there, although on reflection he admits he does not know how Mrs. Tweedale could compel the figure to remain, he rushed off into an adjoining room and picked up his camera. Fortunately this was loaded with quarter-plate slides, and without a moment's delay he returned to the morning room where they were at luncheon.

The vicar then placed the camera on a window-sill and focused it up the room, the distance between the camera and the position where his wife still said she saw the figure being about three and a half yards. The light not being very favorable for an interior picture he gave an exposure of twenty-five seconds. Mrs. Tweedale described the figure as that of a little man, and said the top of his head appeared to be about on a level with their son's shoulder.

Mrs. Tweedale and the boy continued sitting at the table during the time the plate was being exposed. The resulting negative appears to have corroborated Mrs. Tweedale's vision. Mr. Tweedale explained that he personally developed the plate shortly afterward and it had not left his possession in the meantime.

The negative which was shown to the reporter by the vicar is of quarter-plate size and reproduces the corner of the morning room. In the foreground is the dining table, the white cloth of which reflects the light into the corner. Sitting at the table is Mr. Tweedale's son and opposite him toward the edge of the plate, there is a shadowy but distinct impression of the head and shoulders of a little old man, with abundant hair and flowing beard.

The figure, which appears to be in a semi-incumbent position, almost hides that part of the furniture and a piano, which lies behind it, and this, in Mr. Tweedale's opinion, conclusively proves that the apparition had definite objectivity, although invisible to the normal vision of himself and his son. In response to the suggestion that the camera may have played a trick upon him, the vicar said he had carefully examined conditions as they were at the time. The camera is in perfect order and the plate was taken from a new box of quarter plates and had not been previously exposed. No person of similar appearance ever had been photographed by him and none of the family recognized the figure disclosed on the negative. His wife, he said, clairvoyantly saw the figure which she described, and upon the sensitive plate being exposed a figure was disclosed and was recognized by Mrs. Tweedale as being like the man she saw."

Of course, I am not pretending to avouch the truthfulness of this narrative. I can easily see the possibility of error or fake in the publication and the alleged experience. All I wish to call attention to is that granting the actuality of such a phenomenon, it need not be regarded as supernatural or beyond human explanation, for science seems to be approaching an explanation along some such avenues as I have indicated by the electron hypothesis of thought. And incidentally I might point out that a slight circumstance in the narrative, as cabled, would perfectly accord with the theory.

It will be observed, the reporter states that the vicar "cried out to his wife to keep it there, though on reflection, he admits, he does not know how Mrs. Tweedale could compel the figure to remain," etc.

But upon my theory that is precisely the feat which Mrs. Tweedale could accomplish. For if the figure was nothing else than the radiant form of thought, which had been organized in her mind (the thought could have been organized unconsciously as well as consciously), then, by keeping her attention close upon it, intensifying its visualization, she would actually have been able to detain it "in the air" till the plate of the camera seized it.

Certainly some such explanation is far more within the natural methods of the universe, within the rational possibility of physical agencies, than the theory that a ghost, an inexplicable and incomprehensible creation, had suddenly manifested itself, and accomodated its hosts long enough for them to catch a picture of it. I will shortly present the argument that indicates the application of this theory of thought to the possibility of an after life. But before doing so I should like to acquaint the reader with the fact that there seems to be a growing scientific disposition thus to interpret ghosts and psychic manifestations, without recourse to supra-natural agencies or supernatural spirits.

A careful distinction must be drawn between the theory of the perambulance of discarnate spirits, who, some believe, throng the invisible atmosphere, and are ever ready to communicate with us mortals, and the existence of impalpable thought-forms, the lingering remains of departed souls which may ever invade our minds. There is a vast difference between the invasion of thoughts and the rending of the veil by the return of a spirit form.

We know that in our normal lives thoughts pass from mind to mind. With the normal activity of thought we are familiar and it requires no miracle or wonder to acquaint us with the experience. Therefore we can easily understand how if a thought remains as an entity, or a lingering yet permanent form of vibration in the ether, it may affect us as the waves of sound or light affect our optic or olfactory nerves. It seems from the facts and deductions drawn in this work that the existence of thought-forms in the invisible ether may be hypothetically accepted as a reality. We can easily appreciate such a possibility if we contemplate the workings of the force of heredity in human life. Heredity, that is, the descent of characteristics that are germinally implanted in the human system, can be nothing more than the continuant impression of thoughts that once existed in one's ancestors, either living or dead; what has descended from one's parents or forebears is the thought energy that shapes itself in disposition, temperament, or idiosyncracy, or perchance visibly disports itself in feature or physical form. If it were not for the thoughts that have descended to us we would not only not think as we do, but we would not act or feel or achieve as we do in the various occupations and evolutions of life. If then an invisible thought can flow down from an ancestral source into the blood and tissue of a new born being, and materially affect it in its future career, it may easily be apprehended how if thoughts linger after the death of individuals as actual entities in invisible ether, these thoughts may attack sensitive and susceptible souls

who will as it were echo them back into conscious expression. (I am purposely avoiding here any reference to the debatable ground of hereditary, acquired characteristics.)

But such a possibility is a vastly different thing than the continued existence of a complete personality which returns to communicate with us in a fashion similar to the customary associations of human beings. There has not yet in my judgment been presented a sufficient number of facts to demonstrate such a reality. All that we can say, at best, that has come back is now and then a wandering sentence or thought, which is just what would occur if the return of thought were possible. For it must not be forgotten that if we accept all the communications said to have come through the alleged mediumship of Mrs. Piper and others, what we have at best is a re-constructed personality begotten in the subconsciousness of the medium, and portrayed in dramatic form. Precisely the same thing happens to every one of us every night that we sleep and dream. A lingering reminiscence occurs to the sleep consciousness and the sudden recurrence of such a memory begets at once a dramatic story which is woven out in beautiful or frightful dream-form, yet which is after all but the creation of the superlatively active imagination. Only so much of the dream is true as pertains to the reminiscence or thought that impinges on the dream-brain — the rest of it is all fiction generated by the imagination to which the recurring thought gives rise.

When we consider this fact — (the extraordinary

capacity of the sleep-consciousness to awaken imaginary forms that take on all the verisimilitude of reality, which are themselves suggested to the dream-mind by the impingement of a reminiscence) we can easily understand how a thought remaining over from the life of one departed, might awaken in the trance-mind of a medium all the dramatic portrayals that were divulged in the messages of Mrs. Piper or the wonderful results of Prof. Flournoy's medium, so happily narrated in "From India to the Planet Mars."

Because an organized thought-form professes through a medium to be a personality by no means makes the claim a fact; for beside the thoughts communicated it is encumbent on the medium to prove the identity of the professed personality, which has thus far been quite an impossible achievement. One of the reasons why the achievement will always be impossible is because of the lying disposition of thought-forms expressed through the medium's brain; the tendency to deceive the dream-consciousness, which we always experience when we dream. In our dreams we are forced to believe that the personalities that confront our consciousness are what they profess to be; but when we awake we discern, if we can recall the dream, that they were all but figments of the mind, configurations wrought by the imaginative faculty of the dream-brain. In like manner the trance-brain of the medium dramatically portrays to her trance-consciousness thought-forms that claim to be distinctive personalities, yet which may be nothing more than imaginary beings wrought from the im-

pressions the mind or presence of a sitter may make upon her buried consciousness.

One may, therefore, accept the hypothesis of the continuity of thought-forms, and even of spirit-personalities, without at the same time being compelled to accept the hypothesis of spirit return or the genuineness of spirit communion. Even though the personality may survive we have yet no proof that such personality may communicate thoughts to the dwellers in the flesh; for as far as we have been able yet to discover all the communications are but repetitions of thoughts once existing in the minds of those who at one time dwelt on the earth; and, palpably, if they communicate other thoughts, then we are unable to determine that the personality sending such thoughts is the same as it may pretend to be, namely, a spirit of one who once dwelt on earth. Here is the great bridge to be crossed in the problem of psychic phenomena; and until the evidence of identity can be demonstrated to be absolute or at least as convincing and conclusive as what is demanded in a court of justice, we do not seem to be justified in accepting any alleged proofs of such intercommunications.

Sir Willaim Crookes, whose wonderful experiences have defied the whole scientific world, has himself reached the same conclusion.

Hon. Alexander Aksakoff, of St. Petersburg, the well-known philosopher and Psychical Researcher, published in the Spiritualist journal, "Light," London, May 12, 1900, an old letter of Sir William Crookes, written to a lady who requested his personal views on his results thus far achieved. In this letter

Sir William specifically disavows all conviction of having attained the identity of any of his spirit communicants in any of his adventures. This letter is dated Aug. 1st, 1874, at 20 Mornington Road, London. He says:

"Madame: — It is with regret that I can hold out no hope of your receiving the satisfactory proofs you require by any means at my disposal. To 'fix the identity of a deceased person' has been the chief object I have had before me for the last three or four years, and I have neglected no opportunity myself on that point. I have had almost unlimited opportunities of investigation, more so than perhaps any other man in Europe. . . . During the whole time I have most earnestly desired to get the one proof you seek — the proof that the dead can return and communicate. *I have never once had satisfactory proof that this is the case.* I have had hundreds of communications *professing* to come from deceased friends, but whenever I try to get proof that they are really the individuals they profess to be, they break down. Not one has been able to answer the necessary questions to prove identity; and the great problem of the future is to me as great a mystery as it ever was. All I am satisfied of is that there exist invisible intelligent beings who *profess* to be spirits of deceased people, but the proofs which I require I have never yet had; although I am willing to admit that many of my friends declare that they have actually received the acquired proofs, and I myself have been very close to conviction several times."

This is, of course, merely the opinion of one great scientist on the actual results of his adventures in the occult; doubtless it can be offset by statements equally strong by other scientists and it may be

justly said that at the present time more can be found, like Sir Oliver Lodge, who insist that they have tunnelled their way through the dark mountain that rears between the country of the living and that of the dead; yet we believe none has shown the caution, the total absence of predilection and antecedent religious bias that Sir William has, and in the light of this unprejudiced and free investigator the proof of identity cannot be said to have yet been attained.

Perhaps no living thinker is better capacitated to sum up the actual results of these far-reaching researches than the poet-scientist, Maurice Maeterlinck, who approaches the subject with sufficient kindly sympathy to avoid offence even to the devoutest believer in spirit communion. Yet even he, after dispassionately reviewing the substance of the labors of the eminent scientists, philosophers and psychologists who of recent years have given so much of their time to these investigations, says:

"Now, what are we to think of it all? Must we, with Myers, Newbold, Hyslop, Hodgson, and many others who have studied this problem at length, conclude in favor of the incontestable agency of forces and intelligences returning from the farther bank of the great river which it was deemed that none might cross? Must we acknowledge with them that there are cases ever more numerous which make it impossible for us to hesitate any longer between the telepathic hypothesis and the spiritualistic hypothesis? *I think not.* I have no prejudices — what were the use of having any in these mysteries? — no reluctance to admit the survival and the intervention of the dead; but before leaving the terrestrial plane, it is wise and necessary to exhaust all the suppositions,

all the explanations, there may be discovered." (Century Magazine, 1913.)

Maeterlinck concludes that all the phenomena may be explained, as Flournoy long ago insisted, as psychological processes void of all association with discarnate spirits.

"Of a truth, by extending the possibilities of the medium to these extremes, we furnish ourselves with explanations which forestall nearly everything, bar every road, and all but deny to the spirits any power of manifesting themselves in the manner which they appear to have chosen."

However, he is not prejudiced against admitting that the phenomenal forms that present themselves on occasions, consist of some sort of substance, however ephemeral and transitory. In this admission he is quite in accord with the hypothesis advanced in my own previous treatise heretofore referred to.[8] He says, "It appears to be well established as a fact can be that a spiritual or nervous shape, an image, a belated reflection of life, is capable of subsisting for some time, of releasing itself from the body, or surviving it, of traversing enormous distances in the twinkling of an eye, of manifesting itself to the living, and sometimes of communicating with them. They do not seem to have the least consciousness of a new or superterrestrial life, differing from that of the body from whence they issue. On the contrary, their spiritual energy, at a time when it ought to be absolutely pure, because it is rid of matter, seems greatly inferior to what it was when matter surrounded it."

A far more confident view, however, is boldly proclaimed by Sir Oliver Lodge, President of the British

[8] "Psychic Phenomena, Science and Immortality," (Passim.)

Association for the Advancement of Science, in his official address before that body, September, 1913, when he says:

"Although I am speaking ex cathedra, as one of the representatives of orthodox science, I will not shrink from a personal note summarizing the result of my own mind of thirty years' experience of psychical research, begun without predilection; indeed, with the usual hostile prejudice. . . . In justice to myself and to my coworkers I must risk annoying my present hearers not only by leaving on record our conviction that occurrences now regarded as occult can be examined and reduced to order by the methods of science carefully and persistently applied, but by going further and saying, with the utmost brevity, that already the facts so examined have convinced me that memory and affection are not limited to that association with matter by which alone they can manifest themselves here and now, and that personality persists beyond bodily death."

Of course it required no such courage for Sir Oliver to relieve himself of his conviction before the austere body of scientists whom he addressed as burdened the heart of Sir William Crookes who, first of all the world's great scientists, startled the same body almost fifty years ago by similar declarations. The difference between the two eminent scientists, regarding the results of their experience of psychical matters, lay in this: Sir Oliver insists that these results make positive evidence for the continuance of personality beyond the grave, while Sir William was only willing to declare the amazing facts, and leave to future generations of scientists the interpretation of their meaning and prophecy.

Sir Oliver manifestly believes that the experiences of these researchers have proceeded so far since Sir William's assertions, that he may now afford to be positive whereas his predecessor was haltingly and cautiously tentative.

Of course the millions reared in the customary belief regarding the future life will accept Sir Oliver's declaration as final scientific deliverance on the solemn problem, and proclaim that even physicists have been forced to corroborate the belief of the ages by their scientific deductions.

The more thoughtful, however, will still halt and ask of Sir Oliver if what he regards as conclusive evidence is such in the light of all the facts. How much are his deductions colored and forced by the traditional belief which inheres in his religious convictions?

Furthermore, how far do the facts which he himself has experienced prove identity and actual communication of post-mortem personalities? How can he be positive that the "personalities" are not the unconscious creatures of the trance-brain of the medium who acts as the bridge between the living here and the alleged living there? Here is the crux of the problem; and until science can positively demonstrate the identity of the personality that claims to communicate, it is still in the dark. This demonstration, it seems to me, is scientifically still wanting. Many people will, however, easily prove to you that they have had such experiences which positively prove the identity claimed. However, I, at least, have never heard or read of one such experience that could not

be explained as easily on the theory which I have elsewhere set forth in more elaborate form, as on the theory of the return of the spirit of one who had departed.

We are yet all too ignorant of the nature, power and pertinacity of thought-force, to declare that by the return of a thought to an earthly individual we have the proof of the existence of a disembodied spirit that speaks to those still living on this planet. We have a vast deal to learn relative to the physics of thought as of its psychology, before we can determine so large a problem as that of the continuity of a personality beyond death and the capacity of such personality to afford earthly evidence of its actual existence. It seems to me that the field of psychical research is at present logically restricted to the evidence and interpretation of thought energy and thought manifestation, and not until it solves all the problems relating to the nature and possibilities of thought, is or can science be prepared to declare itself finally on the problem of the after existence of human mortals or their possible communication with inhabitants of this earth.

Nevertheless, though the efforts of the psychic researchers may not yet demonstrate the actual existence of disembodied spirits or the possibility of their communing with the living, the results have no negative effect on the scientific problem of the after life. Nowhere has science yet disproved the future existence of the soul, however it may have failed positively to have demonstrated it. Certain scientists of emi-

nence, it is true, have personally delivered themselves of negative convictions, but these must always be regarded as the statements of their own beliefs and not the absolute and unmodifiable conclusions of science itself.

CHAPTER XXXI

Sir Oliver Lodge and "Raymond"

Recently, however, Sir Oliver Lodge, who is the most persistent and serious of the searchers after results in psychic experimentation, has given to the world in the shape of a very large book, narratives purporting to be communications from the alleged spirit world that would seem to compel the modification of the conclusions I have thus far drawn. Merely because I am not so married to a theory, even though my own, that I am incapable of divorcement from it, I here gladly present the facts for which Sir Oliver vouches, and shall undertake to put them under the search light of careful analysis and interpretation.

Sir Oliver is so convinced of the genuineness of all the communications which he has received from numerous spiritistic mediums, both private and professional, that he has been completely captured by the theory of spirit communication, and is apparently unwilling to consider any other. The facts to which I am now to refer are found in his recent volume called "Raymond, or Life and Death."

It is but becoming to say that one hesitates to attempt to remove from the minds of those who mourn their lost ones any hypothesis which seems to afford them comfort, as Sir Oliver's theory seems to, both for himself and his entire family, after the slaying

of their brilliant and promising son, Raymond, in the war.

However, scientific pursuit should not be permitted to halt, lest truth be beclouded merely because of the delicacy of sympathetic feeling.

I shall not of course be able to review the many alleged communications which were received and published in this book, nor indeed would that be necessary; for it may be said with absolute justice that there is not a single communication there reported which seems to afford evidence for the presence of the alleged spirit which could not as easily be explained on the theory I have above hinted at, namely, that the medium's mind (unconscious, of course, was played upon by some lingering thought or series of thoughts that roamed about and impinged upon her trance or subconscious organism. If one will but read all these communications with the theory in mind that the medium is unconsciously representing in dramatic form, as in a dream, the impression which an alleged spirit-personality is making upon her, one will see how beautifully the theory works out.

Let us take for instance a rather complicated communication, purporting to come from Raymond, through the Medium, Mrs. Leonard ("Feda").

Sir Oliver Lodge is sitting and it is he who writes and comments on it in the book. Where the initials are used they refer to Sir Oliver. The answers are given by "Feda," the medium's spirit name, or control. The communication is alleged to have come

from Raymond, and his identification is established to the satisfaction of Sir Oliver by it.

"O. J. L. — Is that the end of what you want to say yourself?

YES

O. J. L. — Well then, now I will give you one of the boys' questions, but I had better explain that you may not in every case understand the reference yourself. We can hardly expect you to answer all of them, and if you don't do one, I will pass on to another. But don't hurry, and we will take down whatever you choose to say on each of them. The first question is:—

O. J. L. — "Do you remember anything about the Argonauts?"

(Silence for a short time.)

O. J. L. — 'Argonauts' is the word. Does it mean anything to you? Take your time.

YES

O. J. L. — Well, would you like to say what you remember?

YES

Then, by repeating the alphabet, was spelt:—

Telegram

O. J. L. — Is that the end of that answer?

YES

O. J. L. — Well, now I will go on to the second question then.

"What do you recollect about Dartmoor?"

The time for thought was now much briefer, and the table began to spell pretty soon:—

COMING DOWN

O. J. L. — Is that all?

No

O. J. L. — Very well then, continue.

HILL FERRY

O. J. L. — Is that the end of the answer?

YES

O. J. L. — Very well then, now I will go on to the third question, which appears to be a bit complicated.

"What do the following suggest to you:—
Evinrude
O. B. P.
Kaiser's sister."

(No good answers were obtained to these questions: They seemed to awaken no reminiscence. Asked the name of the man to whom Raymond had given his dog, the table spelt out STALLARD quite correctly. But this was within our knowledge.)

(End of extract from record.)

NOTE ON THE REMINISCENCES AWAKENED BY THE WORDS 'ARGONAUTS' AND 'DARTMOOR'

On reporting to my sons the answers given about 'Argonauts' and 'Dartmoor' they were not at all satisfied.

I found, however, from the rest of the family that the word TELEGRAM had a meaning in connexion with the 'Argonauts' — a meaning quite unknown to me or to my wife — but it was not the meaning that his brothers had expected. It seems that in a previous year, while his mother and I were away from home, the boys travelled by motor to somewhere in Devonshire, and (as they think) at Taunton Raymond had gone into a post office, sent a telegram home to say that they were all right, and had signed it 'Argonauts.' The girls at home remembered the telegram quite well; the other boys did not specially remember it.

The kind of reference they had wanted, Raymond gave ultimately though meagrely, but only after so much time had elapsed that the test had lost its

value, and only after I had been told to switch him on to "Tent Lodge, Coniston," as a clue.

Now that I know the answer I do not think the question was a particularly good one; and the word 'telegram,' which they had not expected and did not want, seems to me quite as good an incident as the one which, without a clue, they had expected him to recall in connexion with 'Argonauts.' Besides, I happened myself to know about an Iceland trip in Mr. Alfred Holt's yacht 'Argo' and its poetic description by Mr. Mitchell Banks and Dr. Caton in a book in the drawing-room at Tent Lodge, Coniston (though the boys were not aware of my knowledge), but it never struck me that this was the thing wanted; and if it had come, the test would have been of inferior quality.

Concerning the answer to 'Dartmoor' his brothers said that COMING DOWN HILL was correct but incomplete; and that they didn't remember any FERRY. I therefore on another occasion, namely, on 22 October, during a sitting with Feda (that is to say, not a table sitting, but one in which Mrs. Leonard's control Feda was speaking and reporting messages), said — still knowing nothing about the matter beyond what I had obtained in the table sitting — "Raymond, do you remember about 'Dartmoor' and the hill?"

The answer is recorded as follows, together with the explanatory note added soon afterwards — though the record is no doubt a little abbreviated, as there was some dramatic representation by Feda of sudden swerves and holding on: —

From Sitting of O. J. L. *and* M. F. A. L. *on* 22 *October,* 1915. *'Feda' speaking.*

O. J. L. — Raymond, do you remember about Dartmoor and the hill? Yes, he said something about that. He says it was exciting. What is it that he says? Brake — something about a brake

— puttin the brake on. Then he says, sudden curve — a curve — he gives Feda a jerk like going round a quick curve.

(I thought at the time that this was only padding, but subsequently learnt from Alec that it was right. It was on a very long night-journey on their motor, when the silencer had broken down by bursting, at the bottom of an exceptionally steep hill, and there was an unnerving noise. The one who was driving went down other steep hills at a great pace, with sudden application of the brake and sudden quick curves, so that those at the back felt it dangerous, and ultimately had to stop him and insist on going slower. Raymond was in front with the one who was driving. The sensations of those at the back of the car were strongly connected with the brake and with curves; but they had mainly expected a reference from Raymond to the noise from the broken silencer, which they ultimately repaired during the same night with tools obtained at the first town they stopped at.)

O. J. L. — Did he say anything about a ferry?

No, he doesn't remember that he did.

O. J. L. — Well, I got it down.

There is one: all the same there is one. But he didn't mean to say anything about it. He says it was a stray thought that he didn't mean to give through the table. He has found one or two things come in like that. It was only a stray thought. You have got what you wanted, he says. "Hill," he meant to give, but not "ferry." They have nothing to do with each other.

On a later occasion I took an opportunity of catechising him further about this word FERRY, since none of the family remembered a ferry, or could attach any significance to the word. He still insisted that his mention of a ferry in connexion with a motor

trip was not wrong, only he admitted that "some people wouldn't call it a ferry." I waited to see if any further light would come; and now, long afterwards, on 18th August, 1916 I received from Alec a note referring to a recent trip, this month, which says:—

> "By the way, on the run to Langland Bay (which is the motor run we all did the year before the run to Newquay) we pass through Briton Ferry; and there is precious little ferry about it."

So even this semi-accidental reminiscence seems to be turning out not altogether unmeaning; though probably it ought not to have come in answer to 'Dartmoor.'

Now let us examine this experience and see whether it really assures the identity of Raymond, or whether it does not fit into the theory that the trance or subconscious mentality of the medium was played upon by thoughts wandering either from the past brain of Raymond, or still lingering either in the subconsciousness of Sir Oliver or of members of his family.

First, let us note that Sir Oliver himself is unwittingly affected by this very theory when he comments on the word STALLARD which was the correct name of the dog given by the medium. He says "But this was within our knowledge."

Now by "our" he means either his own knowledge and that of his wife, who frequented the sittings with him, or within the knowledge of all members of his family. The question at once arises, if Sir Oliver detects the possibility of the medium's

subconscious mind discerning the name of the dog that lingered consciously or unconsciously in his own mind or the minds of the other members of his family, then does he not imply that the medium is merely reflecting these thoughts in her declarations? If that is true of the name of the dog why is it not true of all the other features of the communication?

Now take the word TELEGRAM. It would seem indeed that here was a case —which evidenced the presence of the spirit of Raymond, for it gives out information which is wholly beyond the conscious or unconscious memory of the sitter. Notice that the word ARGONAUTS is associated with that of TELEGRAM. Observe that when the words "Argonauts" was mentioned by the sitter there was a long pause on the part of the medium. Manifestly the subconscious mind was feeling the impression of a rising memory (we have the experience normally when we are struggling to remember something and it will not present itself till something else suddenly suggests it.)

Now that impression gives rise to the associated word "Telegram." What the association was the medium could not communicate. "Telegram" was the final answer, and that was all the medium could say about it. Now the explanation which Sir Oliver gives of the telegram-experience, instead of apparently supporting the evidence of identity as he seems to think, appears to me to result in a contrary conclusion. He says, "I found, however, from the rest of the family that the word TELEGRAM had a meaning in connexion with 'Argonauts'— a mean-

ing quite unknown to me or to my wife — but it was not the meaning that his brothers had expected. It seems that in a previous year, while his mother and I were away from home, the boys travelled by motor to somewhere in Devonshire, and (as they think) at Taunton Raymond had gone into a post office, sent a telegram home to say that they were all right, and had signed it 'Argonauts.' The girls remembered the telegram quite well; the other boys did not specially remember it."

Because the experience, which the boys who had given the questions to their father to put to Raymond, was not the one they had expected Raymond to refer to, Sir Oliver seems to think it could not have come subconsciously to the mind of the medium.

But the fact that the reminiscence came in jerks and suggestions, in single words and not complete sentences, is itself a support of the theory that there were subconscious emanations of the minds of the boys that floated toward and affected the subconscious mind of the medium. Knowing how indestructible the memory of the subconscious mind is (it is permanent, continuous, mechanical and indestructible) is it not plain that the word "Argonauts" called up the word "Telegram," both of which words were connected with a forgotten experience of the boys but which never disappeared from their subconscious memory or minds and might be called up, of course, without their knowledge, if a synchronous or sympathetic mind came in contact with them? Because these memories were not in the conscious or subconscious mind of Sir Oliver, the sitter, does not in the least affect the deduction, for in the plane

of the subconscious activities there seem to be secret avenues of mutual approach of which the conscious plane is wholly unaware. The boys knew their father had gone to the medium with their questions; their subconscious minds as well as their conscious minds were directed to the experiment, and fastened upon it; whatever there was in their past or present minds that might act synchronously with the mind of the medium would be subject to expression, and impinge the medium's mind.

Theoretically at least this deduction is quite as logical and convincing as the theory that it was the actual personality of the departed Raymond which gave the communication.

In the same manner the word FERRY may be explained, which seemed to Sir Oliver to be so surprising and convincing. It matters not that the boys did not recall any experience connected with a Ferry and therefore did not understand the communication from the alleged spirit of Raymond. The fact that they had once seen that ferry would place an ineradicable memory or registry of the experience in their subconscious natures and wholly unknown to them that memory might be resurrected and in a vague way come to the medium. The very fact that it was so vague, she giving only the word and being utterly unable to say anything more about it, would sustain my theory rather than that of Sir Oliver's; because the fact having so long ago passed out of the conscious memory of the boys it would lie in the subconscious

doubtless vaguely, unobtrusively, and would therefore thus present itself.

In precisely the same manner thoughts come to us in vague, distant, tantalizingly suggestive phases, when we are struggling to recall an event which persists in lingering behind and coming forth only in intimations but never palpably and conclusively. Psychologically the two experiences, that of struggling to recall a lost event and that of the medium's messages, operate identically, the one upon the plane of one's own subconscious nature and the other upon that of the medium's.

If one will go through the entire tedious list of Sir Oliver's experiences as narrated in this book I think he will find that all the messages and narratives lend themselves easily to the theory I am expounding.

A pertinent question to the discussion is this: If it is really the desire of the spirit to reveal itself by some phase of identification why does it take this difficult, roundabout, suggestive and tantalizing method instead of stating facts boldly and clearly? If Raymond wanted to really identify himself with the Ferry and Argonaut experience why did he not speak about it in a manner that would be convincing and leave no loop holes for other theories? If he depended on the family sometime reading the puzzle he must have known that it would give them great pain if they failed to do so, and would have discouraged their belief in his after existence. On the theory that it really was Raymond who communicated, then, it would seem that when we go over to the other side we have either less intelligence, or less ability, or less ingenuity than

we have on this side, or we take chances more foolishly. It puts the whole communication in the category of the frivolous and ridiculous rather than that of seriousness to imagine that Raymond trying to identify himself was playing with the wit and ingenuity of his relatives to read a very hard puzzle he was giving them, by referring to a very remote experience of the boys which had passed wholly out of their conscious memory.

But that very situation fits most beautifully into the theory of thought-wanderings which I have attempted to expound, and affords neither an unethical nor an unintelligent element to enter into the problem.

It would, however, be wholly unjust to Sir Oliver's research and experiment in the psychical field (whose earnestness none can question) to pass without comment the really conspicuous and startling story he narrates about a certain photograph which had been taken of Raymond in a group of officers of which no member of the family had the slightest knowledge, and information of which reached them only by accident or at least unexpectedly.

These, briefly, are the circumstances: Mrs. or Lady Lodge (M.F.A.L.) had a sitting with one Peters whose control is "Moonstone" on 27th of September, 1915, at which time there was given the first intimation of the existence of this photograph. The medium suddenly remarked: "You have several portraits of the boy. Before he went away you had got a good portrait of him — two, or three. Two where he is alone; and one where he is in a group of other men.

He is particular that I should tell you this. In one you see his walking stick." *(Moonstone here put an imaginary stick under his arm.)*

Both Mr. and Mrs. Lodge claimed utter ignorance of the group picture. Sir Oliver says: "I was rather impressed with the emphasis, 'He is particular that I should tell you this.'" On Monday, October 29, one month and two days after this sitting they received a letter from Mrs. Cheves, a mutual acquaintance, giving them the information that her son, who was an officer in a South Lancashire Regiment, had sent a group of officers taken in August, offering to send her one if she had not already received it. The photograph was sent by Mrs. Cheves and received by the Lodges on December 3rd. Sir Oliver then goes to Mrs. Leonard for a sitting and receives the following communication through Feda:

"Extract from the Record of O. J. L.'s Sitting with Mrs. Leonard, 3 December, 1915.

(Mrs. Leonard's child-control, Feda, supposed to be speaking, and often speaking of herself in the third person.)

FEDA.—Now ask him some more.

O. J. L.—Well, he said something about having a photograph taken with some other men. We haven't seen that photograph yet. Does he want to say anything more about it? He spoke about a photograph. Yes, but he thinks it wasn't here. He looks at Feda, and he says, it wasn't to you, Feda.

O. J. L.—No, he's quite right. It wasn't. Can he say where he spoke of it?

He says it wasn't through the table.

O. J. L.—No, it wasn't.

It wasn't here at all. He didn't know the per-

son that he said it through. The conditions were strange there—a strange house. (*Quite true, it was said through Peters in Mrs. Kennedy's house during an anonymous sitting on 27 September.*)

O. J. L.—Do you recollect the photograph at all?

He thinks there were several others taken with him, not one or two, but several.

O. J. L.—Were they friends of yours?

Some of them, he says. He didn't know them all, not very well. But he knew some; he heard of some; they were not all friends.

O. J. L.—Does he remember how he looked in the photograph?

No, he doesn't remember how he looked.

O. J. L.—No, no, I mean, was he standing up?

No, he doesn't seem to think so. Some were raised up round; he was sitting down, and some were raised up at the back of him. Some were standing, and some were sitting, he thinks.

O. J. L.—Were they soldiers?

He says yes—a mixed lot. Somebody called C was on it with him; and somebody called R—not his own name, but another R. K, K, K,—he says something about K.

He also mentions a man beginning with B—(*Indistinct muttering something like Berry, Burney—then clearly)* but put down B.

O. J. L.—I am asking about the photograph because we haven't seen it yet. Somebody is going to send it to us. We have heard that it exists, and that's all. (*While this is being written out, the above remains true. The photograph has not yet come.*)

He has the impression of about a dozen on it. A dozen, he says, if not more. Feda thinks it must be a big photograph.

No, he doesn't think so, he says they were grouped close together.

O. J. L.—Did he have a stick?

He doesn't remember that. He remembers that somebody wanted to lean on him, but he is not sure if he was taken with some one leaning on him. But somebody wanted to lean on him, he remembers. The last what he gave you, what were a B. will be rather prominent in that photograph. It wasn't taken in a photographer's place.

O. J. L.—Was it out of doors?

Yes practically.

FEDA (*sotto voice*)—What you mean, 'yes practically;' must have been out of doors or not out of doors. You mean 'yes,' don't you?

Feda thinks he means 'yes' because he says 'practically.'

O. J. L.—It may have been a shelter.

It might have been. Try to show Feda.

At the back he shows me lines going down. It looks like a black background, with lines at the back of them. (*Feda here kept drawing vertical lines in the air.*)

Now without going into further details suffice it to say the description of both Mrs. Leonard and Peters was very accurate. There was a group of twenty one officers and Raymond sat in the position as indicated and he had a stick in his hand. Altogether the accuracy of the description of the unknown and unseen photograph was so perfect and marvellous that it might well convince one that the spirit personality of Raymond had truly given the communication. However, it is necessary that we should attend to a few points before we reach a favorable or unfavorable conclusion.

The first criticism that I would make is that Sir

Oliver had probably not been sufficiently careful to save himself from possible fraud. His disposition as well as that of Lady Lodge was one of utter credulity and a guarded inclination to help on the medium a bit. Though there is no evidence in the record that any actual information was given to the mediums by either of them. But Sir Oliver's credulity is first detected where he says he called on certain mediums incognito, having taken pains not to let his identity be known. This caution would seem to have been a work of supererogation, for among people well informed, especially among well read spiritualists, the face of Sir Oliver must be very familiar, as it has so often appeared in magazines and newspapers. I doubt therefore very much that he was unknown to any of the mediums on whom he called. Sir Oliver says: "On the afternoon of the same day, 27th September 1915, that I had the first sitting with Mrs. Leonard, Lady Lodge had her first sitting, as a complete stranger, with a Mr. A. Vout Peters, who had been invited for the purpose—without any name being given—to Mrs. Kennedy's house at 3:30."

Now Sir Oliver himself was conscious of the impossibility of disguising his identity among mediums and naively remarks: "It may be objected that my own personal appearance is known or might be guessed. But that does not apply to members of my family, who went quite anonymously to private sittings kindly arranged for by a friend in London (*Mrs. Kennedy, wife of Dr. Kennedy*) who was no relation whatever, but whose own personal experience caused her to be sympathetic and who is both keen and critical about evidential considerations." (p. 96.)

But on page 117 we are introduced to this same Mrs. Kennedy "a recent friend of ours in London,

who herself has the power of automatic writing and who, having herself lost her beloved son Paul, has had her hand frequently controlled by him," etc.

Now whoever knows anything about people who are sympathetic and tender and who have or think they have mediumistic powers, knows well how unprejudiced and critical they are! Experience proves that it is utterly fatuous to trust such people for anything in the way of evidential conditions to prove the genuineness of psychic phenomena or the identity of spirit personages. Unconsciously and instinctively they will lie and cheat, give way information and perform whatever may be necessary to save an experiment from failing. No one knows this better than Sir Oliver and all the experimenters in psychic matters. Flammarion says he had experimented with every known medium and he has not found one among them that would not cheat if they were not prevented and the cheating was necessary to the success of the sitting.

This then is the first weak link in the chain of Sir Oliver's record of evidences. It may well be questioned whether Mrs. Kennedy had not let something drop that gave Peters in the first interview with Mrs. Lodge his chance to suddenly exclaim, referring to Raymond, "Was he not associated with chemistry?"

Now Sir Oliver remarks as to this: "As a matter of fact my laboratory has been rather specially chemical of late."

Here then it is plain "Moonstone," or Peters made a bad break; for he was supposed to be receiving a message from Raymond with a view of identifying

him. Now instead of referring to anything that might identify Raymond he refers to what Raymond's father is connected with. It has no bearing at all on Raymond, except that he might have known about it and visited his father's laboratory. This reference may then be explained in one of two ways without any dependence on spirits. Either Mrs. Kennedy had unwittingly intimated to the medium that someone was coming, with whom she had arranged, who is related to one well known in the scientific world or is a chemist, etc., or if the medium was truly psychic he might have detected in the atmosphere of the sitter, Lady Lodge, the chemical atmosphere by telepathic transfer.

The first suggestion is, however, probably the more likely, for the following sentence, coming through the medium which he enjoined should be written down carefully and clearly, as manifestly evidential, seems to me to give away the trick. The sentence is "NOT ONLY IS THE PARTITION SO THIN THAT YOU CAN HEAR THE OPERATORS ON THE OTHER SIDE: BUT A BIG HOLE HAS BEEN MADE." Now, that sentence is a paraphrase of one of Sir Oliver's own statements which had been widely scattered throughout public print.

Either the medium read it clearly in Lady Lodge's aura, reflected from that of Sir Oliver, which is a scientific possibility; or it had been unwittingly hinted to him that the lady was in some way connected with a great scientist, and he, making a happy guess that it was Lady Lodge (unless indeed he knew her by her picture) recalled Sir Oliver's famous dec-

laration and reproduced it as evidence of the spirit presence of Raymond.

At least such an explanation is plausible and natural and is fully as logical and likely if not more than the theory of spirit intervention.

Now the second weak link in the chain is that Sir Oliver does not seem to allow for the possibility of fraudulent practice upon his credulity, regarding the possible presence of the photograph in London, unknown to him but quite possibly known to others besides the photographer.

The photograph was taken at the front August 24th, 1915. It could not be printed there because of trench fighting and the negative with other negatives was sent to Aldershot for printing. The negative was not sent till the 15th of October. That is, it remained at the front for nearly two months. Meantime Raymond had been killed, Sept. 14th. That is nearly one month subsequent to the taking of photograph. The presumption here would be that Raymond had had an opportunity of looking at the negative as doubtless all the members of the group did. This point is important in summarizing the psychic possibilities of the situation.

Now on November 29th Mrs. Cheves writes that she has a photograph of the officers, etc. That is a month and a half after the negative is sent from the front.

On the 27th of September, however, one month befor the negative has left the front, Peters through "Moonstone" mentions the photograph as a message from Raymond. He mentions it but incidentally and

makes, as Sir Oliver states, a mistake by asserting that Raymond carried the stick under his arm.

Then on Dec. 3rd, about two months after Peters had given the first hint about the photograph, Mrs. Leonard, through Feda, gives a further and more detailed description of the photograph in answer to a direct question addressed to Raymond.

Sir Oliver says that Raymond had only one leave of absence from the front, July 20th, 1915. By this he means to insinuate that he could then have given no information about it because the photo had not then been taken. But there were twenty one officers in the group. Sir Oliver says nothing about any of them. How does he know whether any of these had leave of absence after the taking of the photo, and whether they may have made any mention of it among their friends when visiting London or the vicinage? Twenty one is a large number and it is quite within possibility that some of them at least returned from the front for a visit subsequent to the taking of the picture and that they might at least have dropped a passing remark, if, indeed, they did not give an accurate description of the photograph.

I am speaking of this of course merely as a possibility, not as a fact. Nevertheless it is a possibility that must be investigated before any final credence can be put into the genuineness of the message or its acceptance as any sort of evidence of the identity of Raymond.

Aldershot, where the photographers printed the photo, is only 34 miles southwest of London. It stands to reason and common sense that if the pho-

tographers printed such a splendid picture of twenty one conspicuous officers of the Lancashire Companies, they would have displayed them in the windows and possibly have sold some besides. I am not saying this is so; but I am merely indicating that all these possibilities must be allowed for, and disproved, before any credence in the genuineness of the message can be granted.

I say then it is quite possible that Peters, during the period elapsing between the taking of the negative, Sept. 14th and Sept. 27th, might have gotten a hint of the existence of the negative by some one of the officers at home on a furlough.

I am the more convinced of this possibility by the fact that at the time Sir Oliver sat with Mrs. Leonard he received, through Feda, so much more accurate and detailed a description of the picture. This sitting took place on December 3rd, just sixty-seven days after Lady Lodge's first sitting with Peters when she first heard about the picture. Here are sixty-seven days for the mediums to operate to land the biggest prize they could seize! If it could go out to the world that Sir Oliver had received this vastly important message proving almost beyond a possible doubt that his son Raymond in person, only a few days after his death, had communicated with him, and afforded such evidence of his identity as is beyond dispute, what a tremendous triumph would this be for the cause of spiritualism; and what energy and ingenuity every medium might well afford to expend on it!

I find almost a proof, and certainly a virile hint, of this deduction in Peters' own remark on which Sir

Oliver dwelt, but for a different reason than I do. The remark was: "He (Raymond) is particular that I should tell you this, namely, that the photograph had been taken," which confirms me in this deduction, especially when it is reinforced by another sentence also delivered by Peters as coming from Raymond, during the same sitting. After Peters had delivered the famous sentence about making a hole through the partition between the operators on both sides, "he then jumped up in his chair vigorously, snapped his fingers excitedly and spoke loudly: 'Great God' how father will be able to speak out! much firmer than he has ever done, because it will touch our hearts.'" (Page 134.)

Now to any who are acquainted with the tricks, unconscious and conscious, of the professional mediums, this scene appears very much like an elaborate trap in which to catch Lodge by flattery and deception, and make him feel that he is going to get great renown and a victory over his opponents and those who scoff by giving evidence that is undisputable.

Again I wish to emphasize that I am not asserting the transaction was a fraud. I am merely trying to show how there was apparently every opportunity for the perpetration of one, and unless the sitters were every moment on their guard, and had employed keen and effective detectives they might have been imposed upon.

If, again, we remove the possibility of fraud, then it occurs to me that every detail relating to the mysterious photograph can far more rationally and easily be explained by the hypothesis of telepathic

and wandering thought-forms than by that of spiritism, which seems to border on the plane of the supernatural.

Once assume that Raymond may have seen the negative, as undoubtedly he did, as well as every member of the group, then you have the initial point of all the following telepathic results.

That thought of the photograph was in his mind, or at least was registered there subconsciously. He dies in battle; his dying thoughts are of home; he regrets that the negative could not have been printed so his parents could have seen it; 13 days after his death his mother comes in contact with the mind of Peters the medium. Suddenly Peters sees a photograph, but it is so indistinct he cannot give a detailed description; he has some intimation about a stick but he thinks Raymond is holding the stick under his arm. As a matter of fact all the officers sitting on the ground are holding sticks in their hands in the picture.

Peters' unconscious mind has received the passing vibrations of Raymond's last thoughts or images, and sees them dimly. He tells in an indifferent way what he sees.

Then 67 days after that, Sir Oliver comes in contact with the subconscious mind of Mrs. Leonard and there she is able to give a far more detailed and satisfactory description, so perfect that it would seem she must have actually seen the picture.

The fact, too, that at this sitting "Feda" (Mrs. Leonard's control) spoke about the names of one or two of the officers and could not get any of them

exactly but did approach as near as the initials which fitted some of the names of the officers but not all, is further evidence of the telepathic or vibratory hypothesis rather than the spiritistic. For if Raymond could say that there were initials B and C and K, etc., why could he not equally well have given the names of Boast and others in full?

The fact that the medium could get no further than the initials would indicate either that she had heard a rumor as to who these officers were or had been told and forgotten, remembering no more than initials, or, which theory I prefer, that, as in dreams, there floated before her mind dim outlines of these names and she could catch no more than the initials as they flitted along; getting some of them wrong and some right.

If this theory is correct it would explain how she might have seen these names dimly and swiftly passing, as things sometimes do in dreams, and could only catch the first letter, yet when trying to give the name in full, getting it either wrong or blurred and mixed. Thus when asked: "Were they soldiers (the characters in the picture) she replies:

"He says—a mixed lot. Somebody called C was on it with him; and somebody called R—not his own name but another R. K, K, K,—he says something about K."

"He also mentions a man beginning with B (indistinct muttering something like Berry, Burney—then clearly) but put down B."

Now of all those initials none could be recognized but B (Capt. S. T. Boast) and of course this is a guess. Sir Oliver says that officers whose names be-

gin with B and C and with R are among them; though none beginning with K. Therefore we must conclude that the medium was guessing, for it was easy to imagine that among twenty one names some would begin with almost any letter of the alphabet; indeed we might say it would be a mere chance that any of the 26 characters of the alphabet would not easily find an initial place in twenty one names of men.

So perhaps a bit of all three theories enters into the game. There may have been a bit of fraud (for which as I think I have shown there was ample room); there may have been some psychic discernment and actual mediumistic or sub-conscious activity; there may have been a good deal of happy guessing, which is always a venture, yet often worth the price if good game is to be captured.

If thus the photograph experience fails in Lodge's psychic experimentation to demonstrate identity, we may well believe that it is quite impossible for such identification to be established, and that as yet we are driven no nearer to the deduction that logically psychic manifestations are the effect of the return of spirits, who once inhabited the flesh, to the scenes of their former abodes.

I wish here, however, to register my disposition toward all the efforts that are making for the proof of the after life from alleged spiritistic manifestations. I have not the slightest prejudice against such a demonstration but would gladly welcome it if it were true. I am, however, forced to the conclusion that as yet nothing positive either as evidence of identity of specific persons, or even as evidence of

any phase of spirit manifestation has been given the world.

The hypothesis which I am presenting seems to me to give a clearer, more scientific and logical explanation of all the phenomena; namely, that thoughts in the human mind emanate from their source and become psychic elements or units, mento-organisms, thought-forms, or what you choose to call them, that remain either permanently or through a certain period of time, in the ethereal atmosphere, and are subject to synchronous association with minds they contact in living human brains.

CHAPTER XXXII

A Laboratory Suggestion

I did not know when I wrote my "Psychic Phenomena, Science and Immortality," that there were any other persons in the world who were studying along similar lines and had reached almost identical conclusions. When I discovered this fact it naturally greatly encouraged me in my hypothesis and investigation; for, usually, when a number of minds approach a consensus on any theory it develops in time that the theory becomes a reality.

After the publication of my work, from England I received the following letter:

"1 Abingdon Mansions Feb. 14, 1914.
Abingdon Road
Kensington
London W

Dear Sir:

Your interesting 'Psychic Phenomena, Science and Immortality' has just come to my notice. I read on page 418 in reference to what you call the soul-body; 'Its appearance, could it be seen (as biologists prophesy it sometime will be by the use of instruments not yet invented) would be luminescent or radiant,' etc.

This passage has greatly interested me for reasons which you will understand should you be able to spare the time to read the enclosed. It was written in 1908 and unfortunately it is only now that I am able to take practical steps towards demonstrating its accuracy. I am not following the method as set

forth in the 'Annals' (a paper now also defunct) but the same principle is of course involved. I hope to affect this demonstration sometime during the present year. . . .

Yours faithfully,
Edward W. Bobbett."

The very interesting and suggestive article which my correspondent enclosed I shall here in part present, as worthy of serious consideration, and as further illustrating how a seriously scientific mind is attempting to apply strictly physical theories to the explanation of psychic manifestations. The article appeared in Volume VII, Number 48 of "The Annals of Psychical Science," December, 1908.

"As the ether is to the orthodox scientist, so is the 'double' to the followers of metaphysics. Both are necessary in order that we may have a working hypothesis. And just as the evidence for the reality of the ether becomes more pressing every day, so again our secondary body or double becomes more necessary in order that we may give rhyme and reason to our speculations. It is not my present purpose to show that this secondary body exists, but, assuming this to be the case, I wish here to submit certain proposals which may be of value.

Reasoning from the 'clouds,' so common at seances and from certain experiments of M. Durville recently recorded in the Annals, it seems certain that our secondary body is composed, at least in part, of radioactive matter. The discharge of the electroscope without contact in the presence of Eusapia Paladino (Dr. Imoda's experiment) is also significant. Rays emanating from the medium ionize the surrounding air, which, thus turned into a conductor of electricity, discharges the electroscope. It will ultimately be found, I believe, that the rays emanate from the body

we are considering, and not from the physical body. It is of interest to note, in passing, that these particular rays from Eusapia caused a gradual discharge of the instrument. There is a hint here, it seems to me, that these are the despised and rejected N rays of M. Blondlot, for as he himself points out. . . . the increase of the phosphorescence under the action of N rays takes an appreciable time, whether to appear or disappear."

This view is quite in keeping with the theory I tried to work out in my work referred to above, and it is encouraging to find other thinkers and investigators coming to similar conclusions. Speaking of alleged "materializations" (for which I have tried to account on physical grounds, page 455[1]) he remarks: "May we not argue that particles given off by the materialization figure caused ionization of the air immediately surrounding it, this in turn 'producing a sort of white vapor?' If this is so it seems to me we can imitate part of the process of materialization and at the same time demonstrate the existence of the secondary body, which, it will be evident, seems to be radio-active."

He then proceeds to present the manner of constructing an instrument in which the ionized aggregate, or the radio-active secondary body, can be made visible, having been educed from the physical body through anaesthetization. He does not yet seem to have reached any positive results but I call attention to the correspondence and the investigator's hopes, first because it is suggestive and may arouse other investigators to attempt the experiment, and second because his deductions are so closely similar to my own.

[1] "Psychic Phenomena, Science and Immortality."

A LABORATORY SUGGESTION

"Arrange a cage so as to imprison some animal, preferably a dog or monkey. An aluminum box with a glass window must fit closely over the box. An entrance and exit pipe must be fitted so as to admit an anaesthetic gas. Also a pipe must be fitted to admit air. Now the first box must be enclosed within a second chamber also having a window, and it must be suspended at four corners so as to hang in the centre of a second box. The pipe which is to admit gas must of course pass to the outside of the large box and the same with the air pipe. We must also have an air pump attached to the large box. Between these two boxes it is necessary to prepare an atmosphere of perfectly dust-free-air or water vapor. With these conditions we commence operations by admitting gas to the small box, at the same time partly shutting off the outer air supply. The anaesthetic will, by hypothesis, displace the secondary body of the imprisoned animal. This in theory will occupy a position somewhere between the two boxes—that is, somewhere in the prepared atmosphere. But also, by hypothesis, it will generate rays of some description, probably those called beta rays. These rays of whatever nature they ultimately prove to be will cause ionization. Now, with a stroke of the air pump, we withdraw some of the air, causing the remaining air to expand suddenly. The temperature will immediately fall, and this will cause the water vapor to condense upon the ions. But the particles producing ionization have not a very extended range, at least, some of them have not, and probably a variety of rays would be given off. Those particles of short range, then, will not produce ionization far from their source, i. e., the secondary body. But they will be given from every point of this body. Therefore when condensation occurs, the resulting line will *outline the form of the secondary body*. We shall have proved the existence of the body by thoroughly reliable objective means."

I learned from this interesting gentleman by correspondence that his circumstances were such that he had not been able to prosecute his experiments to practical results, but had hoped soon to achieve them.

In a communication more recently received (since indeed I have had this publication in preparation) I am informed by my correspondent, that while, naturally, he has been much interrupted because of the war, yet he did find opportunity to experiment with a very good subject. The results were tentatively satisfactory to himself, but the circumstances were such that he could not call in, as he had intended, properly qualified visitors, who could give their personal attestation to the verity of the results. He does not feel, therefore, that there is any immediate scientific value in his efforts, but he is working on hopefully and it may be before long happy results will follow.

It is beneficial, however, for us to know that there are individuals and independent experimentors and investigators working along kindred lines; and to me this is particularly valuable and encouraging, because I am not so situated that I could attempt any personal experimentation, for I have not yet found a subject that could be useful to such ends.

Dr. Crawford's Experiments

Since I have been writing this book a remarkable work has appeared, entitled "The Reality of Psychic Phenomena." In this work the author, W. J. Crawford, D. Sc., presents 87 laboratory experiments with a remarkable medium, all of which were conducted

on strictly scientific principles and with extraordinary precaution. Dr. Crawford, being a mechanical engineer and a university lecturer, utilized delicate measuring apparatus to determine the action of the psychic force upon the medium, its effect in increasing and decreasing her weight as it passed to and from her in levitation, etc.

The results of Dr. Crawford's experiments have given rise in his mind to what he calls the "Cantilever theory," by which he means that the psychic energy shapes itself in the form of an invisible rod passing straight from the medium's body horizantally, and with a curved and expanded (fingered?) end seizes the object which it tips, pounds or levitates. The psycho-mechanical theory is most interesting and proves the tendency of scientists to grasp this subject from the material point of view, notwithstanding the fact that this author finally inclines to the view that the "operators" of the force are discarnate spirits. Still, as to the notion of the "rod" or psychic projection he says, "I am inclined to think it is a form of chemical energy associated with the human nervous system. At any rate, I think it a bit doubtful that this psychic energy is associated with particles of matter." (P. 241.) Here his "cantilever theory" would seem to parallel my own "electron" theory of thought. Both theories pointing away from the plane of pure imagination and psychological metaphysics to methodical laboratory experimentation. (See Appendix E.)

Another Laboratory Surprise

While I am reading the proofs of this work, strange to say, I come in contact with another marvellously corroborative incident, illustrating the law that mind waves do work together in the ether, and cause many minds to labor without one another's knowledge in attempted solutions of world problems.

I have already referred to Dr. Albert Abrams, of San Francisco, in previous pages of this treatise.

But I was not then aware that he had been at work for years in demonstrating in the laboratory, and by physical instruments, the truth of the very principle for which I myself have been for years contending.

In my previous book (Psychic Phenomena, etc.), I had said, discussing the nature of telepathy, "Science must deal with things, and not merely with theories, with substance and not with supposition. To know what telegraphy is she must first know more about electricity than she had before; to know what wireless is she must first become cognizant of Hertzian waves and the invisible media involved in the wireless transference of physical messages. Thus it is with regard to so-called telepathy. To stand still merely after christening it 'mental transference,' and think it has been explained, is absurd. We have learned what medium in Nature permits the transference of telegraphic messages; so we must learn the substantial, material or ultra-material element in Nature that suffers itself to be utilized in the transference of mental thoughts."

Now in that work, I contended, that hypothetically the agency had been discovered, at least theoretically, in the electrons which revolve around the brain in the exercise of thought and fly off from the brain to other brains. In the present work I have attempted by logical discernment to re-inforce that theory.

But now comes a practical and distinguished scientist and physician, a biologist who is familiar with electrical phenomena, and actually corroborates my theory by the discoveries he has made in laboratory experiments with physical agencies.

In an article recently published in the Electrical Experimenter, he says: "Telepathy is in disrepute and scientifically minded psychologists do not believe it. Science demands that phenomena should be objective, capable of reproduction at all times and demonstrable by instruments of precision." He says further, "Brain waves are an actuality and like light and the impulses of 'wireless' are conveyed by the ether. The electron theory shows that the ultimate constituents of matter are electrons or charges of electricity and that radio-activity is dependent on ethereal disturbances by change in motions of electrons." Again: "The electro-magnetic waves in 'wireless' demand an exciter, but the sensitive human reflexes, first utilized by the writer in detecting energy, make an exciter unnecessary; *the revolutions of the electrons alone substitute the exciter.*" (Italics are mine.)

This latter statement is precisely corroborative of my own explanation of the manner in which the brain action, in thinking, the cellular disturbance, is ac-

tivated by the impaction of the electrons, which, as it were, embody the thought, and convey it beyond the mind of the thinker.

Dr. Abrams has apparently proved all this by practical experiments carried out in the Cooper Medical College. He reaches the identical conclusions I have advocated with regard to so-called "psychic phenomena" that "they are independent of disembodied spirits and referrable to human energy." He says the experiments which he has demonstrated will serve "as a means of disocculting the occult, and will enlist the genius of the multitude in corroborating my original investigations."[2]

[2] See "Electrical Experimenter;" also Abram's "New Concepts in Diagnosis and Treatment" and "Popular Demonstration of Thought Transference," by Albert Abrams, A.M., M.D., L.L.D., F.R.M.S. (San Francisco, California.)

CHAPTER XXXIII

The Electron Theory of Thought and the After Life

What bearing, then, does this hypothesis (the electron theory of thought and consciousness), have upon the problem of a possible after life? If it has any bearing at all is it of a negative or affirmative character? In order to pursue this study we must consider first the nature and evolution of consciousness. We have already seen how modern science almost unanimously accepts the view of the evolution of consciousness from antecedent forms of animal and even vegetable life up to its crowning triumph in man.

We should not overlook the fact that in the ascendency of consciousness it becomes more intense and concentrated and organizes a special apparatus or instrumentality in each ascending stratum.

If we contemplate the lowest form, the amoeba, for instance, we know that we find no differentiation in the substance of which it is composed; it is entirely homogeneous. Yet there must be some sort of consciousness in the amoeba, else it would not reach out by improvised mouths and limbs to secure food for itself from the external world.

There is here then a germinal consciousness; but it is unconcentrated, diffuse and generalized. The entire amoeba acts as the organ of its limited con-

sciousness; the whole body is at once responsive to each internal or external stimulation.

Biologists inform us that as we ascend in the scale of life we find a gradual differentiation in the groups of cells set apart for special functions, and that from a slight tube that grows out of the skin there slowly develops the nerve-system and in the courses of ages finally the brain. Always the degree of the concentration and intensity of the consciousness is commensurate with the complexity of the gradually forming apparatus of nerves and brain. In the amoeba we have, as said, the lowest stage of consciousness because there is no concentrated organization through which to express it, but only the homogeneous body of the amoeba. But when we come to the animal kingdom we find that here in each ascending stratum there are formed more concentrated apparatus and thus the state of consciousness becomes more intense; until finally in the human organism it develops into sustained individuality—or self-consciousness—a state which does not exist below man.

So true does this fact seem to be that it is now quite generally accepted as a biological law that self-consciousness could not express itself until the central nervous system was organized in the human body. When that eventuated then came self-consciousness. This law seems to be re-enforced by the study of a human being. For we find that in children there is no existence of actual self-consciousness till some time after the first or second year. Almost always before that, the child speaks in the third person about itself; it is somebody else to itself. And when the

realization of self-consciousness arrives it is concomitant with a sense of mental exhilaration. It is said of Goethe that he came running to his mother in great delight and exclaimed, "Mutter, ich bin ich." He had found that he was not another but himself.

Now, with this fact there is, biologists and physiologists are now informing us, another important accompanying fact. It is, that not until the frontal lobe of the brain is sufficiently developed, is it possible for this self-consciousness to arrive. Moreover, it is now discovered and set forth as a triumphant discovery that when the brain is analyzed it reveals the fact that there are certain distinctive thought centres set apart for the higher modes of consciousness.

On this biological law let me quote Haeckel, for the reason that he is commonly regarded as the biological leader of aggressive materialism and because of the clear exposition. He says: "Physiological observation and experiment determined twenty years ago that the particular portion of the mammal brain which we call the *seat* (preferably the organ) of consciousness is a part of the cerebrum, an area in a late developed gray bed, or cortex, which is evolved out of the convex dorsal portion of the primary cerebral vescicle, the 'fore-brain.' Now the morphological proof of this physiological thesis has been successfully given by the remarkable progress of microscopic anatomy of the brain, which we owe to the perfect methods of research of modern science. . . . The most important development is the discovery of the *organs of thought* by Paul Flechsig of Leipsig; he proved that in the gray matter of the

brain are found the four seats of the central sense-organs, or 'four inner spheres of sensation' . . . . Between these four 'sense-centres' lie the four great 'thought centres', or centres of association, the *real organs of mental life;* they are those highest instruments of psychic activity which produce thought and consciousness.'"[1] ("The Riddle of the Universe," p 183.)

In a general way the truthfulness of the physiological law that the higher development of the brain is commensurate with the formation of the skull and the more complex and delicate associations of cell-groups is perhaps beyond dispute.

We may then safely conclude that the so-called faculties or, better said, the functions of the brain known as perception, memory, representation, reflection, etc., have been developed by the aggregation or grouping of specialized cell-areas in the brain (which we may call psychic units) and by virtue of the exercise of these faculties they have become stereotyped into fixed forms. Now I think it is no exaggeration in analogy to conclude that just as the biological cell is the physiological unit, by whose aggregation and organization into special groups the complex organism of a living body is evolved; so what might be

[1] I am not oblivious of the fact that there is not a universal consensus among physiologists as to this precise and detailed discovery. Some doubt still prevails in some quarters, "Is there a definite localisation of special mental qualities or moral tendencies, and, if so, where are they located? These are problems of extreme difficulty, but their interest and importance are difficult to exaggerate. . . . When we have collected information as to the relative development of the various parts of the higher brain in all classes of mankind with the same thoroughness with which they have investigated the racial peculiarities of the skull the question will be within a measurable distance of solution." (Prof. Johnson Symington, "Variations in Development of Skull and Brains"— see British Report, Association for Advancement of Science or Smithsonian Annual, 1903.)

called the psychological cell (any mental act) may be regarded as the psychic unit of the soul. Now as the association of the biological cell-groups in the physical organism produces special organs (visceral, thoracic, etc.); so the association of the psychic cell-groups, namely perception, thought, memory, etc., constitute what might be called the organs of consciousness.

In recent laboratory experiments, as already stated, the physical organs have been successfully removed from the body and still, under certain conditions, they continue to function normally, while outside the body. These extracted organs may be made to continue to act and work precisely as they did in the living body of the animal if the proper kind of sustaining element or food can be procured for them. Certain solutions have been found which perform this office; so these extracted organs actually continue to live and work, although the original body from which they came is dead. To this we have already referred.

Now why should we not investigate and treat the psychic cell-groups, or organs of the soul or consciousness, precisely as the biologist has treated the physiological organs of living animals?

Is it not true that just as the physiological organs can be removed and made to continue to function, so in psychological experimentations, and likewise sometimes spontaneously, the cell-groups of organs of the soul are extracted from the mind and independently of it continue to function exteriorily? We have seen a hint of this possibility in thought-photography; for if such a photograph can ever be taken it must be that what is grasped in the camera are the external-

ized forms of thought that move out from the brain and are held long enough for the seizure of the camera's plate. We see a hint of this law again in the so-called apparition or ghosts, in clairvoyant vision, and we may safely say, in all phases of what are popularly called psychic phenomena.

We have learned in hypnotic experimentation that the visualization of a mental state in the experience of the subject is commensurate with the intensity of the thought in the mind of the operator. If the idea is clear, strong and complete, it will the more surely become the state of the consciousness of the subject. Or even if the idea is not clear in the operator's mind, the persistent repetition of the thought or idea by the operator will by sheer force of repetition be visualized to the recipient. In short by this experience we discover that the degree of the intensity of the consciousness measures the duration of the thought expelled from the operator's mind.

May we not then logically conclude that the thought-forms which emanate from the human mind, and somehow exist invisibly outside the mind, are potentially constant entities, whose duration depends on the degree or intensity of the consciousness from which they sprung? Here then we discern a possible basis for a future existence, dependent on the degree of self-consciousness attained by a human being. Of course a difficulty must here be met and overcome if possible. Even granted that the states of consciousness, which we have agreed to call cell-groupings or soul-organs, might continue to exist, how are we to

know that they would consist of a personality, especially the personality from which they emanated?

That is, how are we to know that between these thought-forms there exists a permanent link which so establishes their affinity that they must coalesce and mutually function as a personality hereafter? We must be frank and admit that the difficulty is not yet wholly overcome.

We might say psychological experiment is about, in this regard, at the same stage where biological and physiological experimentation rests at present. Just as the biologist has, at present, demonstrated that the physical organs can live and functionate when abstracted from the body, or the living organization of matter; so the physiological psychologist can cause the activation and continued functioning of a psychic organ (a thought or state of consciousness) when abstracted from the mind which originated it.

But, as in biology the art of holding together the living organs within the body in indefinite duration, so that planetary immortality becomes possible, is not yet achieved, so, in the psychological realm we have gone about as far as the biologist and shown that psychic cell-groups may be compelled to function outside the living brain from which they emanate, but have not yet discovered the art of compelling their perpetual integrity, so that they will continue to act together in co-operative self-conscious modes of existence, after the body has been destroyed.

But the possibility of this psychic continuity should not seem less demonstrable than the physiological. In the biological realm there is already a prophecy of the

physiological possibility; why then should we think the psychic possibility absurd?

Here are the progressive stages of the demonstration. First, thought is a mode of motion; second, the substance in which thought moves, or which it activates, is by hypothesis radiant matter, or rays of electrons; third, thought-forms, made up of radiant matter, not only exist in the brain but hypothetically may leave the brain and reproduce themselves in other brains; fourth, thought-forms in the shape of apparitions may be photographed, thus establishing their substantial nature; fifth, the duration of the thought-form is measured by the degree of the intensity of the consciousness; therefore, sixth, as thought-forms can be temporarily held outside the brain long enough to be photographed, it follows as a possibility that they may be permanently maintained if the state of consciousness is sufficiently integrated and strong.

This line of reasoning is, of course, merely a suggestion, but it indicates the laws or processes in Nature that would make an after life a logical possibility.

On the subject of the possibility of the permanent integrity of the ego or the personal consciousness, I have said elsewhere,[2] where I have fully elaborated the theme: "The problem of identity both here and in a possible hereafter will depend wholly on the capacity of the so-called ego to maintain its permanent synthetic character. So long as there is a tenacity of memory, recognitiveness and the ability of merging one's infinite series of momentary incidents of consciousness in a constant self-consciousness, so long may

[2] "Psychic Phenomena, Science and Immortality," pp. 216-17.

the self or personal ego be continued. But on the interruption or cessation of such capacity the identical self may be dissipated." . . .

"What we call the consciousness of the ego, or the self-consciousness is, then, but the capacity of the primary-self to command certain experiences and retain their momentary or tentative memory. But a large residuum of this consciousness sinks into the secondary-self and becomes its self-consciousness, which is not to be confused with the self-consciousness of the normal self. When the two halves are so related that the primary-self remains in complete command of the situation, we have what we call normal self-consciousness. When the primary-self loses its superintendency, and the sunken-consciousness rises into command, we have secondary self-consciousness. Now the whole problem of the normal personality consists in the power to maintain its supremacy over all inferior self-conscious activities. Modern experimental psychology has proved that in all human beings this supremacy can easily be disturbed if not dethroned, and that even the healthiest and most regular human beings are not free from this intrusion."

The problem of personality or self-consciousness is then immediately connected with another, and that is whether there is in the experience and capacity of the human organism any bond of union which may permanently hold together the potentially discrete and segregated parts of the consciousness. Manifestly that bond is MEMORY.

"This is the fundamental fact, and the marvellous revelation of modern physiological psychology, namely, that the ego, or the self-conscious 'I,' is potentially susceptible of permanent self-realization, is, as it seems, the ultimate reality back of or within the varying and seemingly contradictory experience of tran-

sitory personalities. The 'I,' is ever self-discoverable. Although seemingly for a time the 'I' may be obliterated, science is now able to prove that it is not necessarily an ultimate obliteration, but the rather an obscuration, a momentary disappearance." (idem. p. 255.)

What physiological psychology demonstrates then is the fact that there is a potentially permanent personality or ego, and its permanence or perpetuity depends only on the law of psychic association or memory. The consciousness that is susceptible of self-concentration, of intense personal integration, in short, a consciousness that is pillared and buttressed by a rigid character, both moral and intellectual, is the consciousness required to prophesy continuity of duration.

Such a potential consciousness has been evolved in the realization of mankind out of the age-long development of memory and synthetic experience in the lower animal kingdoms. In man, then, the potential and slowly ascending self-consciousness has reached its climax, and is maintained by a highly specialized and perfected type of personal memory. Therefore human consciousness logically predicts the possibility of continuity after death, whereas that of the lower animals does not. If, then, human consciousness, is by hypothesis, sustained and sustenanced by a material element, which is primary and indestructible, its permanent continuity after death is predictable and possible, as logically as the continuity of the synthetic physical life of human beings upon this planet (which seems to have been demonstrated by the laboratory success of Dr. Carel and others).

Incidentally the recent discovery of the Law of Consciousness overturns an objection to the possible permanent continuity of self-consciousness which Haeckel presents in his "Riddle." He says: The momentous announcement of modern physiology, that the cerebrum is the organ of consciousness and mental action in man and the higher animals is illustrated and confirmed by the pathological study of diseases.

When parts of the coretx are destroyed by disease the respective functions are affected. . . . How would that be possible if consciousness were an immaterial entity, independent of these anatomical organs. And what becomes of the 'immortal soul' when it no longer has the use of these organs." (p. 184.)

Haeckel overlooks two facts here. One is, that the affected organs, "destroyed" by lesions, are capable of resuscitation by psychological treatment as amply illustrated in modern psychological clinics. In some cases where the vital centres of the brain have been seriously injured, the functions of these organs have been taken up by others, either by vicarious re-actions, or, by restoration of memory; the conscious function of the "destroyed" organ has been revived. Then, secondly, there is the possibility that such an hypothesis as I am advancing (the electron theory of consciousness) may be true, in which case the organs of consciousness would not be transcendental but embodied in substantial elements. If this element, by hypothesis, is permanent and indestructible it affords the very condition for an "immortal soul" which Haeckel says does not exist.

Nevertheless there is still a more difficult problem involved which must here be considered. The problem

is, granting the fact that thought and consciousness are substantial states embodied in radiant matter, or an ultra-microscopical condition of physical substance, how do we know that this substance will continue to exist as an embodiment even if consciousness continues, after the death of the outward body. This problem will be considered in the following chapter.

CHAPTER XXXIV

Continuity of Life and Immateriality of Matter

When in my previous work I first tentatively set forth the hypothesis which I have in this book undertaken to elaborate, I made the following statements: "Apparently we have all the essential factors of an after-death existence. All seemingly depends on the personal use we can make of these factors; dependent on individual education, discipline, knowledge and desire. If we can so intensify the energy of the individual will that we can bend the magical element, which forms the substance of its activity to the end we desire, it may be that when even all the visible, or even the immediately invisible units of the physical organism have expired and dissolved, there still survives a far more ultimate and subtle substance, though product of dissolving substances which have so long served us, yet still susceptible to the energy of the will, which from the beginning constituted the immediate energy that actuated it."

And again I laid down this law as seemingly indicated by natural condition: "The force of the personal volitional energy exercised in radio-active particles gives promise of a conquering personality which shall survive the decay of the coarser substance of the cell aggregates."

My attention was called to a weak spot in the rea-

soning which I had advanced in that work by Professor Lascelles Abercrombrie, in the extended review he wrote for the Manchester Guardian, in England. He says: "Mr. Frank's conclusions are not scientifically sound. It is possible that the vehicle for the operation of the personal ego in the cellular field of consciousness is maintained by means of radio-activity. Granting this we are also asked to grant that the personal ego is itself contained in this concomitant radio-activity; and perhaps it may be done. Well, then, says Mr. Frank, here you have the ego contained in an ultra-material substance which, by its very nature is indestructible; therefore the ego may well be also indestructible. The ingenuity, of course, depends on the word "substance;" radio-activity is taken to be, like that which we usually call substance, something formal and defined, capable of continued existence in one condition, whereas it is really something in an inconceivably rapid and unlimited flux. The activity of the ego cannot depend on radio-activity as a stationary emanation, but as a constant escaping liberation, a ceaseless change of the material into the ultra-material; not in the radiant substance is the ego contained, but in the actual radiation, which requires cellular matter for its source. If this is really a true account of personal activity it goes directly against Mr. Frank's desired conclusion; for what becomes of the ego when it has no more material to convert into ultra-material? We may admit his contention that in the human being are 'all the factors essential to the continuity of personal existence;' what he does not show is that the factors maintain after physical death those

relations with each other whereby personality existed."

I cannot deny that this is really an ingenious objection to the theory advanced in this work and calls for a careful answer. I thank the writer for it, even more than I do for his statement that, "Nevertheless, the whole argument is one of the most interesting that has been suggested, and the book is by no means to be condemned for its final failure; a failure, which only those who, like Mr. Frank, prefer science to philosophy, need regard as at all serious for the belief in personal immortality. Mr. Frank has amassed a large body of information, and manages to extract a great deal of suggestiveness from it."

The point that he makes is, that if the ego resides in an atmosphere of electrons, or in the volatile emanation, there will come a time when it can have no further local habitation because the material from which the ultra-material substance flows, will have been exhausted. Radio-activity is now a permanent and universal condition of all matter in Nature. That is, all matter is ceaselessly dissolving, not only in the sense of chemically disintegrating and disappearing in space, but in the sense of atomic dissolution. It is the condition of atomic dissolution that brings about the force, so-called, of radio-activity, and the impalpable and invisible substance known as its emanations. Says Duncan in "New Knowledge;" "Radio-activity" consists of "particles flying off with inconceivable velocity from bodies in their natural condition — bodies such as uranium, thorium and radium; and finally, . . . the soil and water itself emits them and

the air we breathe contains them. These bodies are invariably associated with matter and arise from matter — from any form of matter under special conditions, and from special forms of matter under all conditions." (p. 150.)

Atomic matter is ceaselessly dissolving and emitting these ceaselessly flying particles. These particles assume distinctive shapes and may become subject to the photographic plate. Now if it is true that these particles are flying off from the dissolution of the atoms contained in the cellular structure of the human organism, why does it necessarily follow that when the chemical dissolution of the organism transpires, i. e., when the body completely dissolves, that the ego will cease to therein express itself? We know what becomes of the chemical elements and atoms in the visible dissolution; they are simply freed and pass into space. But we know that though freed they come again and re-express themselves in other forms of life, duplicating their former relations. The atoms and elements that once went to form a rose return to make another rose; the atoms of the apple return to form another apple and so on.

What then becomes of the ultra-material particles, known as radio-activity, that fly off into invisibility and play such curious rôles in Nature? Can we think of them as annihilated? That is impossible; for there is in Nature no ultimate annihilation.

They must keep on elsewhere to perform some distinctive office. If it is true, as I have tried to show, that the ego is really co-existent with and active in the delicate substance or radio-active energy, which

is emitted from the dissolution of the atoms of the living cells, then just as the atoms return to earth to re-compose sometime another living form, why on the same principle should not the invisible particles — or stream of electrons—also elsewhere continue to be held together by the impress of the ego?

The atom we know is a manufactured unit of invisible matter. It has been millenniums coming. "Atoms of matter are made up of the same negative charges or corpuscles, each aggregation of corpuscles being surrounded by a sphere of positive electricity." In short the atom of matter is a composition of positive and negative electricity formed at some stage in cosmic processes.

Notwithstanding the fact that these "foundation stones of the universe," are ceaselessly dissolving, they are likewise ceaselessly re-forming and that, too, in the identical relations which they formerly maintained. Now, I ask, what is it in Nature that draws them again together? Why do the atoms of the rose return sometime to re-make a rose; etc? Can it be for any other reason than that once, in time, having been brought together in these final relationships, when the separation comes, they carry in their essence the impress of the dissolved relations, that is the memory of the former conditions?

Every form and organism in Nature, every fixed aggregation of atoms and molecules, is the consequence of the impress of memory sealed in the substance revealed. If there were no memory in Nature there would be no order, no organization, no devel-

opment. Without memory matter were unorganizable, and the universe were chaos.

Memory, or shall we call it centripetal motion — the tendency to integrate — exists no less in the atom than in the element, no less in the molecule than in the cell, no less in the cell than in the entire multicellular body of a living animal.

Now as memory is an essential, an inexpugnable property of matter it must also be the essential property of the corpuscles or electrons that constitute the units of matter. These electrons are the radio-active energy which is emitted in the dissolution of the atom —they constitute the substantial residence, as my theory assumes, of the human ego, itself. I have argued that this energy might continue to express the manifestation of the ego after the decease of the visible body. The continuity of the ego will depend on the intensity of the impress of the personal memory—that is of the self-consciousness. The objection might here, however, be interposed that if the atom returns and re-establishes its former relations with other atoms to reproduce a specific substance or element, and does this because of its centripetal memory, then, for the same reason, the corpuscles or electrons of which the atoms are composed would also return with it, insomuch as they constitute the essence of the atom. Hence, my theory is exploded; for if the corpuscles return to assume former earthly relations, then they cannot continue their activities in a new plane of existence.

This would indeed be a very valid and ruinous objection did not two facts come to our relief. The first

is, that the electrons never do return to the earthly relations; and the second is that even if they did they emit emanations which continue their existence independently for a long and perhaps endless duration.

As to the first fact:—"Of the destiny of the imponderable elements that are no longer matter" (electrons) says Le Bon, "we are still entirely ignorant. We know by experiment that *they cannot again form the matter from which they were derived.* Does the electric atom, which all modern ideas lead us to consider as a localized modification in the ether, preserve its individuality indefinitely?" ("Intra Atomic Energy," Rev. Scientifique, 4th Series, Vol. XX, No. 16, 17, 18; and Smithsonian Annual, 1903.)

We see then that the electrons do not return to their original atoms from which they are derived and the above first objection is therefore void.

However, even if they did return, as we shall soon see, there are emanations from these electrons with which we have to deal which give promise of indefinite individual existence.

Can this ultra-material energy, this radio-active essence, exist free from the dissolving atom which emits it, and has it any permanency independent of its origin? This is the core of the issue. That it becomes independent of its source is shown in the emanations. Soddy tells us that when the radium compound is chemically treated, "during the solution or heating, a gaseous substance, called the radium emanation, escapes. If arrangements are made to collect this gas, it will be found that, generally speaking, the whole of the radio-activity the radium has lost is possessed by the gas." ("Matter and Energy" p. 213, 214.)

True, this emanation has but a comparatively brief existence. It is reabsorbed into its mother element. But it escaped. It was free and for a brief period lived an independent existence; and what is more, during that free existence exhibited properties that were utterly impossible to its original source.

Some of these radio-active emanations exist for minutes, days, months, years, as far as at present known. In short they cannot be weaned permanently from the mother element, because, as I put it, the atavistic memory is too strong, the attraction back to its source is still too irresistible.

But these experiments have all been made with radio-active emanations from so-called inert substances. Now if the emanations exist, as I have contended in this work, in the human organism, and if they are indeed the substantial expression of the intelligent and self-conscious ego, then why, even on purely physical grounds, is it not reasonable to suppose that the inertia of the personal memory of the ego will be strong enough to preserve the integrity of the escaped emanation after the dissolution of the visible form?

The physicists, indeed, tell us that in the transmutations which take place in the radium emanation X the fourth change is thought to last 200 years, and the duration of the final product in the continuing transmutation can only be imagined. (See Duncan, New Knowledge, page 148, also Table of Radio-active Emanations, page 132.)

Have we not here, then, the physical elements required for a possible continuous existence of the ego; namely, invisibility, potential permanence, potential

substance, potential form or organization. And, furthermore, that this potential being is indeed substantial in Nature, and not an impossible creation, we may apprehend from the very nature of the electrons of which it is supposed to be composed.

The electron, we are informed, has "mass;" that is, in its motion "it drags along with it a portion of the surrounding ether" (Duncan). It is not made up of insubstantial spirit, a term which cannot be scientifically defined.

Sometimes physicists struggle with this metaphysical proposition and they seem to make short work of it. To a scientist such a thing as a "massless" body seems to be inconceivable. Soddy, for instance, in a moment of diversion, remarks, "A massless particle would belong to that other world of 'spirits' or 'dreams,' the inhabitants of which are not 'conserved,' and the study of which belongs not to physical science. A massless particle, so far as can be seen, if it in any way acquire energy, however infinitesimal, would move at infinite velocity, and would, therefore, leave the universe behind it without the lapse of time. Whether or not future generations will find any room for massless particles, in their philosophy, the present can hardly conceive them to exist, or imagine how they could become known if they did."

The philosophy, relative to a possible after life, which I have attempted in this work, is not, at least, divorced from scientific fundamentals, and is not postulated on the supposition of beings that exist unsupported by a substantial basis.

I have tried to show that granting all the discov-

eries of physicists it would seem that they have presented facts which lay a groundwork on which to build a possibility of after-existence without violating the logic of the material universe.

For if it be true that the ego can continue to express itself in the ultra-material substance which I have described in this work, then it will, howbeit wholly invisible, consist of a body thoroughly scientific in its nature. For the substance will be composed of electrons.

Of this Soddy says: "It is just because the electron has a definite mass, even though it is by far the smallest of any known, *and still is not a material particle,* that its chief interest lies. Assuredly science has here penetrated one step further into the eternal verities. With many of the feelings of an airman, who has left behind him for the first time the solid ground, let us try to venture into this new region of science, of *mass without matter.*" ("Matter and Energy," pp. 169, 170.) (Italics by the author.)

Here the scientist speaks almost like a metaphysician. It but proves how closely science is drawing to the edge of metaphysics, and yet not deserting any of its fundamentals.

This is the paradoxical substance, an immaterial substance, which has mass, that I have conceived as the possible residence of the permanent post-mortem ego.

But as we are theorizing upon the possibility of an ethereal form of matter continuing to exist after the disappearance of the cellular organism of the human body, it might be well to call attention to what has been discovered to be the transmutation of matter.

This is one of the most recent discoveries in physics and resulted from acquaintance with the nature of radio-activity of matter. This force of radio-activity seems to have the power of induction; that is, of transplanting its energy into substances that are not naturally radio-active. "In addition to giving off the alpha-rays or the positive ions possessed by the emanation," says Duncan, "it has the additional very remarkable property of exciting activity in any substance with which it comes in contact. This is the induced radio-activity discovered by Mme. Curie. This activity of surrounding objects, not otherwise radio-active, is due to the fact that the emanation in decaying breaks down into a third invisible and unweighable radio-active body which deposits itself upon neighboring bodies and which, apparently, is in the *nature of a solid.* Surrounding objects thus become radio-active."

Thus far we observe that an invisible and unweighable form of matter transmutes itself by induction into another form that may be made visible and is solid.

Duncan continues: "This excited activity, since it is evolved from and results in the decay of the emanation, has been called Emanation X. The Emanation X has definite chemical properties for it can be dissolved in some acids and not in others. If the acid in which the Emanation X dissolves be evaporated it is left behind on the dish and its radio-activity is unimpaired. . . . It is *not* the emanation, for the rate of decay of its activity is markedly different from the rate of the decay of the emanation. *It is a second*

form of active matter generated from radium via the emanation." ("New Knowledge," p. 123.) (Italics by the Author.)

Here then we find that once radio-activity is generated it has the property of exciting or inducing radio-active properties in other substances and thereby creating an emanation which possesses properties novel and independent, and of aggregating to itself its own form of material manifestation. It is a form of matter generated out of the invisible and unweighable emanation from radium (because of its radio-active nature).

We find here, then, an energy or a substance which possesses the *property of creating a wholly new substance out of its own decay.*

Does not this seem to give us a hint, illusive, I grant, yet a hint, of what may take place in the ultra-material substance which, in this book, I have shown probably emanates from the decayed or dissolved cellular substance of the body in the process of death? *May not its permanence be established by this very process of decay and induction, that is, by transmutation?*

If it be a fact that there passes from the dissolved body, or there is left after it, an aggregation of corpuscles (an aggregate of radiating electrons) which are the emanations of the radio-active energy of the dissolving atoms, may not these emanations create a totally new form of matter in the invisible sphere in which the sustained mental activities of the deceased earthly body may continue to manifest themselves?

If the contention in this work should prove correct,

namely that the electrical corpuscles, or the electrons, are the actual instrumentalities in which consciousness and thought exist, and these electrons are a primary substance of indefinite duration, then why after the death of the mortal elements of the body, could not this remaining electronic body, in which consciousness inheres, transmute itself through the energy of its emanations into a firmer and more abiding substance, precisely as the resultant from the Emanation X of radium is transmuted into a solid by the way of an invisible and unweighable element?

I am not of course insisting that this is what actually takes place after death, for naturally I nor any one else knows. I am merely trying to show that apparently according to laws and processes already discovered in Nature the method whereby it might be accomplished is indicated. If radium — a very heavy element, giving off radiant corpuscles, which are themselves invisible and unweighable, changes into a still more marvellous emanation which has properties wholly different from radium or the radio-active emanations of radium, and then through still another emanation finally reveals itself as a new solid element, then why is it inconsistent to suppose that in death the radio-active energy of the decaying cells and atoms may transmute through emanations into a more permanent form of material expression howbeit still invisible to earthly senses?

In short through the property of induced radio-activity, the body of electrons emanating from the dissolved atoms of the deceased fleshly body, may cause some other substance with which they come in

contact in the invisible ether to become radio-active, and this substance thus affected to give forth an emanation (X) which is itself of a solid or semi-solid nature. "To the emanation X, the solid active body produced by the emanation and capable of settling on other bodies, the major part of the energy of radium must be ascribed." (Duncan.)

Here then may be the correct answer to the objection of my critic, namely, that "even granting the existence of the ultra-material (radio-active) substance which passes from the dissolving body in death, what proof have we that such ultra-material substance may continue after its material source has forever vanished."

If Nature plays such wondrous tricks with solid and manifest matter, even before our very eyes, which we have only by the most delicate instruments but just detected, it should not seem beyond the attribute or prerogative of reason to conceive how she may perform similar tricks with the dead matter that dissolves when we shuffle off the mortal coil. And there is still another lesson relative to the possibilities of an after-death existence taught, it seems to me, in this discovery of the transmutation of matter.

The final product of radium through the emanations which it evolves, by radiation and induction, is an element wholly different than itself and permanent in Nature. It is helium.

Helium belongs to that class of inactive elements which are free, in the ether, and unsusceptible of chemical assimilation.

Now what follows may be wild and riotous, but this

occurs to me: Why, if Nature can produce such a result, could she not likewise out of the emanations from the dissolution of the solid flesh generate, finally, a wholly different substance, free, dissociated, and permanent like helium, which might constitute the indestructible body of the post-mortem consciousness of human beings? But without going into specific details as to a final form of substance which the consciousness or so-called soul might assume in an after life, I merely desire to point out that the processes in Nature are already at work which might generate a future permanent substance as an habilament of the soul in the invisible ether.

We must bear in mind that the present elements of matter, seventy or eighty in number, are the last permanent residue of a process of evolution and transmutation as old as time. Nature labored many myriads of millenniums before this final product resulted, that made possible the extant, manifest universe. (See Appendix F.)

Now, not only has this discovery completely revolutionized the notion of the origin and continuity of the universe which science is forced to contemplate today, but it seems to me it has a positive bearing on the possible destiny of the residue of a human life after the physical form has disappeared. For just as, until this modern discovery, physicists and astronomers were forced to the conclusion that the earth and solar system were in a process of certain decay and after a few million years would all be consumed in a final conflagration, but now are compelled to think that, "a constructive influence is at work, op-

posing this process, and the whole system may turn out to be a conservative one, limited with respect neither to the future nor the past, but proceeding through continuous cycles of evolution," as Soddy says, so, likewise, may we, because of these very discoveries, be forced to hold similar notions of cyclic evolutions of the essence of which a human life is composed and its destiny in infinite realms.

For as we have now discovered the fundamental essence of matter and the universe, and as we learn that this essence is inherently indestructible, but ever lives by transmuting itself into variable residues of evolution, and as, from that fact, we seem to be forced to conclude that the universe will never finally expire but has the inherent power ever to resuscitate itself after dissolving into the primary form of matter, why should we not draw hypothetically similar conclusions of the life of man which, in self-consciousness, thought and volition, as I have tried to show in this work, acts only in and through this primal essence of matter — the ultimate indestructible residue of all that was once manifest in the living form?

When that final stage is reached Nature begins its work all over again; the universe of matter has gone back to the primary form and substance from which it emanated myriads of millenniums ago, and must reconstruct through cyclic stages of evolution matter again into its atomic character out of the first-born electrons.

Why then should not the same thing take place in a formation of matter we call life, which is the most potent, capable, variable and transmorphogenetic of

all organizations of matter; and when the chemical instrumentality through which this life was manifested dissolves (permitting thereby the complete escape of the primary electrons that made up the atoms of the chemical body) why should not the "conservative work of Nature" go on and re-construct these electrons into new expressions of life.

They cannot return again to the atom stage. May they not remain in the imponderable stage of matter where activities are at work, "the cause of which is at present almost beyond conjecture?" In short, if these primordial units of cosmic matter are released to begin their re-association and inter-relations anew, may not the life energy, of which they have shown in this planetary existence that they are susceptible, reunite and organize them in ultra-planetary and invisible activities? But that these electrons might not necessarily be associated in wholly new and uncomplexioned organizations is manifest from the universal law of memory which I have already stated. Would not these electrons in re-assembling be impelled and guided by the impress of the consciousness and personality from which they emanated?

CHAPTER XXXV

The Nature of Immortality

Another critic reminds me that even continuity of life after death does not necessarily prove immortality; it may be, after all but a postponed temporary existence.

That is very true; but the human ego is an organized form of energy which aggregates to itself the substance essential to its immediate expression. Beginning, we might say in the amoeba, or a primary cell of life, the ego variously expresses itself through the transforming phases of energy that result from the association and aggregation of multiplex cells which finally constitute the organization of a human being. It manifests itself as sensation and emotion in the motor nerves and muscular tissues of the body; as feeling and consciousness in the cerebral nervous system and as thought and reflection in the higher cortical cells. Now in all these different departments of the human organism, as well as in many others, the ego finds the instrument of its expression in varying forms of matter and energy which have been developed in the course of human evolution.

We have shown that the highest consciousness and mental action and especially the energy of the will, is manifested, by hypothesis, in the most rarified and marvellous of all forms of matter and energy yet discovered. The substance seems to be akin to that of

the emanation of radium — ultra-material, ultra-microscopical, without weight, and with nothing left of the properties of matter but mass and inertia. Now what we have attempted in the argument is to show that this substance, evolved within the organism itself is the real seat and instrument of the ego acting self-consciously or unconsciously, that it is susceptible of persistence if the ego be strong enough to carry it forward beyond the grave after death.

The process seems to be similar to the action of the electrons, or negative electrical charge, which carries along with it a bit of ether as it flies through space. Now this "bound ether"—the so-called mass of the electrical corpuscle[1]—is vast or minute, persistent or temporary, according to the velocity of the electron or the charge of electricity.[2]

So if the ego have sufficient velocity—that is energy, conscious determinism, in one word, the will to live — to carry along with it, after the dissolution of the coarser body, the rarified radiations of matter in which it resides and acts while the body still lives, it will possess the last remaining essential of invisible matter — namely, mass — to constitute the basis of its potential continuity.

Now assuming that the ego has mass, and is thus capacitated to aggregate a substantial body, after death, will it be able even then to continue on forever? That is the problem my critic suggests.

The answer is evident. We have by no means found the last reducible unit of matter in the electrical cor-

[1] "Electrical mass is not strictly constant; it is a function of speed." Sir Oliver Lodge, "Modern Views of Matter."
[2] See Le Bon's "The Evolution of Matter," pp. 189, ff.

puscle.[8] What we now call an atom of matter is simply a unit composed of two charges of electricity, positive and negative, which science has found the means of separating so as to free the negative charge.

The infinite substances of Nature are merely the result of the association of fixed number of electrons moving around about a centre positively charged.

The only difference between oxygen and carbon, for instance or any other of the nearly 80 chemical elements, consists in the amount of the electrons and the rate of their velocity. Primarily they are identically the same in essence.

Thus if the difference between all chemical elements lies merely in the unstable factors of number and motion, it occurred at once to scientific thinkers that a transmutation between the elements was possible, and thus the ancient dream of the alchemists became realized. This has now been initially accomplished, as for instance, in the evolution of helium from the radium-emanation.

The point I am reaching is this. If even in this crude life of matter science has discovered that there is only one primal substance and that the manifest phases of that substance are variable with the energy which inheres in it; that, in short, the form and expression of the substance are always changing and

[8] "It is well to remember that thought cannot place a limit on the size of the particles of which matter is supposed to consist; and that in strict logic these particles themselves must be held to possess a structure.
The modern tendency is to conceive of an order of particles smaller than the atom, of which it is built up; but at present questions regarding the structure of the smaller particles, which have been termed electrons, are generally ignored." Sir William Ramsay's "Elements and Electrons." (Harper's Living Library, p. 14, 15.)

susceptible of ever more rarified phases; then why is it not reasonable to suppose that the ego itself, by force of its own energy, may have sufficient transforming power to assimilate and organize for its manifestation ever more refined forms of matter resulting from transmutation?

The everlasting continuity of the ego, then, would be measured only by its capacity of conscious penetration into the indestructible and universal energy. Primal substance is infinitely variable. It is plastic and responds instantly to the energy that evolves it.

In a crude way we may use the ocean as an illustration. The water of which it is composed responds to every energy or influence that impinges it. From within and without it is constantly battered by forces that ceaselessly transform its phases of expression. We may follow it from the heavy drops of water that constitute its units and united make possible its vast manifestation, till each drop shall be separated and in solitude constitute but an infinitesimal factor of its immensity. Each drop shall vanish into ephemeral vapor, and that too shall pass into invisible elements in Nature's chemical laboratory.

Now let us imagine a form of vapor precisely duplicating the body of the ocean spreading like a phantom above it. Then beyond the vapory ocean a re-duplicated expression or simulacrum consisting of the chemical elements into which the vapor passes. Then still beyond this simulacrum another consisting of the chemical atoms of which the elements are constituted; while far away yet simulating the form of the ocean we shall imagine the existence of the electrical

units of which the atoms are composed; in short an ocean composed wholly of primary electrons.

Now the point I am reaching is this: The finer the phase of matter into which the original water passes makes it continuously more sensitive or susceptible to more delicate forms of energy. There seems in Nature to be no limit to the possibility of expression; it all depends upon the durability of the energy that is exercised.

Now whether the ego, like the ocean, shall go on ceaselessly re-expressing itself by cyclic returns to manifest forms of earthly expression, or shall find ever finer and more rarified elements of matter through which to reveal its presence in unimaginable spheres of space, is a purely philosophical proposition that necessarily appeals to imagination or predilection.

Whether invisible immortality, or reincarnation, is the manner Nature uses to express immortal existence is not involved in this discussion. I am seeking merely to show that there is a physical and logical basis for after-death existence. I by no means claim either by what I have just said, or by the contents of this work, that the argument proves immortality. I have merely undertaken to show that there is no physical or scientific inconsistency in the possibility of immortal existence.

Nevertheless, I opine that when we speak of immorality as an endless, an everlasting existence, we scarcely realize what that means. There is nothing in Nature that is static; everything expresses itself in varying and changing form. We can realize or conceive how the ego might go on endlessly transforming

the expression of itself in ever-refining phases of matter or energy; yet we cannot conceive of it as an infinite process, because we cannot conceive, or at least realize, in thought, what infinity is.

We have no other way of thinking of immortality, save as a continued existence. To stretch that existence into unqualified infinity is impossible of realization by the human mind.

CHAPTER XXXVI

The Moral Value of Scientific Research

Whether the argument advanced in this treatise will be of consolation or help to the reader will, of course, depend on his predilection and desire. If he be satisfied there is no proof of immortality, he will still continue to think so after reading these pages; for a man "convinced against his will is of the same opinion still." If one is already satisfied and thoroughly cognizant of the fact of immortality, then the argument will be to him a work of supererogation. For his faith is sufficient unto him. But if one is still unconvinced and willing to pursue the truth as a possible discovery, favorable or unfavorable, the study of these pages may prove valuable.

Nevertheless, whether we have faith that we shall live again, or are satisfied the possibility is a pure myth, neither form of belief can possibly affect the fact in Nature. She alone can and must ultimately reply and until we hear her reply as final no knowledge of the subject can be efficient, nor will any form of faith, negative or affirmative, end man's persistent search.

What we need is a mind prepared, without prejudice, for truth. We should be willing to hear Nature's message whithersoever it may lead us. It may be

the solution of all is as Shakespeare portrayed in the picturesque language of Prospero:

> These are actors
> . . . . . were spirits and
> Are melted into air, into thin air,
> And like the baseless fabric of this vision,
> The cloud-capped towers, the gorgeous palaces,
> The solemn temples, the great globe itself,
> Yea, all which it inherit, shall dissolve,
> And, like this insubstantial pageant, faded,
> Leave not a rack behind. We are such stuff
> As dreams are made on, and our little life
> Is rounded with a sleep.

There will ever be those who will be thus satisfied and cease to cudgel their brains. And if, indeed, this is the final voice of Nature we must be still and listen, ready to bow in acquiescence.

Nevertheless, it will be to many a consolation and an inspiration to feel that there may be an affirmative response in Nature, if man but use his reason based on the premises of her message. Those of us, however, who have felt that the profound answer of the ages and man's scientific awakening have but left the pall of gloom and disappointment, assuring us that there is no beyond, may, still, not impatiently hearken to a revision of conclusions resting on once relevant facts, now abrogated by more recent discovery. And if that later voice should proclaim the possibility if not the probability of an after life, we might with Tennyson listen to the "Silent Voices," that seem to speak in the final hour.

> When the dumb Hour, clothed in black,
> Brings the dreams about my bed,

Call me not so often back,
Silent Voices of the dead,
Toward the lowland ways behind me,
And the sunlight that is gone:
Call me, rather, Silent Voices,
Forward to the Starry Track,
Glimmering up the heights beyond me,
On, and always on!

I have purposely avoided the religious attitude — the attitude of metaphysical faith — in this discussion, because I preferred to have the judgment of the court of scientific knowledge, based purely upon the facts and deductions warranted by discovery.

Some may regard the discussion, therefore, as cold and useless in that it may fail to awaken the spiritual vision of the reader. But of this I am assured that if there be in the heart of any a predisposition in favor of a belief in immortality the arguments and method of the preceding pages will not cause it to fade or decline; whereas it is possible that some, who have heretofore discarded the thesis as unworthy of consideration on account of their consciousness of Nature's negative response, may through the presentation herewith made, feel compelled to reconsider and once more seek a solution of the profound enigma.

But whether we be mortal only, or, perchance, also immortal, the use, we make of the present life is the burden which we should feel the weightiest upon our hearts. We can cause our career to be so ugly, disreputable and accursed that its immortality would be a stench and an insult to all who witnessed it. Or we can compel a radiance of ineffable beauty to enswathe our memories which humanity will evermore

court and adore. To live hereafter and leave a worthless life behind is but to add insult to the injury we have inflicted upon humanity. But to live always in the joy of grateful memories that well in the hearts of those who knew us once, even though never their eyes shall again behold us, is to be endued with an immortality more enduring than decaying monuments, as unending as returning years.

Less philosophical than the contemplation of Prospero, less gratifying to intellectual predilection than the famed soliloquy of Hamlet, but far more human, far more personally inspiring are Shakespeare's own words on Death and the possibility of slaying it with the sword of truth and the conquests of noble character.

Poor soul, the centre of my sinful earth,
Fooled by those rebel powers that thee array,
Why dost thou pine within and suffer dearth,
Painting thy outward walls so costly gay?
Why so large cost, having so short a lease,
Dost thou upon thy fading mansion spend?
Shall worms, inheritors of this excess,
Fat up thy charge? Is this thy body's end?
Then, soul, live thou upon thy servant's loss,
And let that pine to aggravate thy store:
Buy terms divine in selling hours of dross;
Within be fed, without be rich no more.
So shalt thou feed on Death, that feeds on men,
And, Death once dead, there's no more dying then.

(Sonnet CXLVI)

So to conquer death were indeed a noble virtue and achievement. It may be that it is the only way that Man can conquer the dread demon. If so, the fruit

of faith in this life is not of sufficient value for man to be made the dupe of disappointment.

For it cannot be denied that the frailty of man has been the need of the cleric. Long has man been held in the grip of metaphysical obfuscation because he dared not think for himself or deny what seemed to him to be untrue. His only rescue is to discover truth for himself; and to this end there is but one servant and friend of man, and that is the power and penetration of unbiased scientific research. For through Science speaks Nature and her voice alone can ease the hearts pining for knowledge or calm the fret of doubt.

CHAPTER XXXVII

The Instinct of Immortal Life

The gave is indeed a riddle and who shall solve it? Evermore the perplexity of the puzzle troubles the thoughtful mind and adds zest to the curiosity of death. Who but asks himself continually, "What shall come after." Instinctively at the brink of the grave, we repeat Tolstoi's comment on its character, when Nikita, in "Master and Man," "died in his own house and was laid, as he wished, beneath the icon, with a lighted wax taper in his hand; . . . sincerely rejoicing that he was passing from this life to that other life which had yearly and hourly become clearer and more alluring to him. Is it better or worse for him there, where he has awakened after his real death? Was he enchanted, or has he found there exactly what he expected? We shall all know soon."

Perhaps we shall and perhaps we shall not. For there is yet the alternative that the sleep may be eternal and neither Nikita nor we shall ever awake. Nevertheless, the curiosity that the sure event of death inspires is ceaseless in the human mind. It is as alluring and illusive as a dream I myself once experienced.

I had been ill, in my dream, and was pronounced incurable by the doctor. I lingered for awhile, till one day I knew that I was dying. No fear seized me at all but an eager, overpowering curiosity devoured me.

I felt somehow that I was slipping out of my body from my feet upwards. I studied the ascent of the death march with curious expectancy; much as a scientist wishing to learn the effect of liquor would trace its results in the body on and on till intoxication confused his senses. So I watched the ascent and certain conquest of death proceed through my body.

"It is coming higher and higher," I kept saying to myself. "Now it has passed the groins, and now the heart and lungs; O, it is coming up higher and higher; it is almost to my head; heavens, it is entering my head; soon it will pass out above my head and then," I was saying to myself, "I shall know the great truth, I shall discover the age-long secret; I shall know," and just as the sensation seemed to touch the crown of my head, I—awoke—much to my disgust and confusion.

But the dream taught me a lesson; it taught me how death may be met calmly, philosophically, sensibly. It is a fate we must all endure; and it should cause no qualms of fear in the heart but only anticipations of sweet rest and sensible repose. We should meet it as Walt Whitman in his carol to death:

Come, lovely and soothing Death
Undulate round the world, serenely arriving, arriving,
In the day, in the night, to all, to each,
Sooner or later, delicate Death!

Prais'd be the fathomless universe,
For life and joy, and for objects and knowledge curious
And for love, sweet love — But praise! praise! praise!
For the sure-enwinding arms of cool-enfolding Death!

Dark Mother, always gliding near, with soft feet,
Has none chanted for thee a chant of fullest welcome?
Then I chant it for thee — I glorify thee above all;
I bring thee a song that when thou must indeed come,
come unfalteringly.

Approach strong Deliveress!
When it is so,—when thou hast taken them, I joyously
sing the dead —
Lost in the loving, floating ocean of thee,
Loved in the flood of thy bliss, O Death!

There is, however, one other possible solution of the perplexing problem of potential immortality that may appeal to the wisdom of scientific research. Whether the alleged instinct of immortality — the feeling that we must always live because we live now—is an indication of an immortality in another sphere, of which we are the heirs, or whether such instinct be nothing more than the natural issue of the fact of existence, because we cannot possibly realize the actuality of death; there is, nevertheless, the necessity of scientifically interpreting and dealing with this feeling. It may possibly not point to the reality of a life unending in another sphere but it may have serious indications and prophetic forecasts relative to the realm in which we now exist.

We must not forget that many scientific discoveries have been the result, as I have said heretofore, of certain vague instincts or feelings of the race, which, because of its ignorance, it tinged with a mystical coloring. When in the course of time the race discovered the error of its mystical interpretation it found out to its amazement that, however erroneous the interpreta-

tion may have been, the persistent instinct led finally to a genuine discovery in Nature — to the discovery of a new law or a new range of phenomena. Myths were, in truth, the precursors of natural science.[1]

It is also a remarkable fact that always along with the approaching discovery of some marvellous truth in Nature, there have followed the suttlers of pretense and mystification. For long periods of human history science was entirely submerged or buried because of the prevalent religious or mystical phase of thought that precluded all rational interpretation.

This was the state of the world for a century or more antecedent to the Renaissance. But during the advent of the new knowledge, or the resuscitation of ancient learning and classicism, all Christendom was invaded with a flood of mystical lore, which, too, was a sort of renaissance from a far more ancient and profound historical source than that of the revival of Grecian lore. The middle ages are the hot-bed of all those soul-sick ventures in the vistas of the imagination that appealed to hearts worn and weary with disappointment in a Faith which they beheld vanishing before their bewildered gaze.

It is noticeable that such a state of human exper-

[1] Primitive man endeavors to propitiate the powerful spirit by sorcery, knowledge of which is only given to the medicine man or to the priest and is not granted to other mortals. The means of utilizing the forces of nature which we hope to acquire by studying nature and natural phenomena, primitive man endeavors to gain by magic. In a certain sense magic is therefore the precursor of natural science, and the myths and lore, upon which the practice of magic is based, correspond to a certain extent to our scientific theories. Myths are, according to Andrew Lang, just as much based upon primitive science, resting on supposition, as upon primitive religious conceptions. We easily comprehend that these suppositions started from observations of every day life, and it is not difficult to divine which observations were particularly concerned." (Arrhenius's, "The Life of the Universe"—Harper's Living Library, page 14.)

ience, such a psychological confusion, illuminated with strangely alluring gleams of transient truth, occurs always at the time of the breaking up of an ancient and effete form of religion or philosophy, and when a permanent and demonstrable truth is to be divulged empirically to the knowledge of man.

Such was the state of things in ancient Greece and Rome, at the time of the decay of their philosophies and religions; such was the state in the Roman Republic at the advent of the Christian epoch; such again was the state of the human mind during the middle ages when the revival of learning was dawning on the horizon of history; such again is precisely the state of the human mind at the present hour since Darwin and the new knowledge of modern science have beamed on the race.

While a very minute portion of the world of culture, proportionately, is devoting itself to rational interpretations and empirical discoveries, the vast horde of the pretentious followers of culture have turned willing ears to the illusive strains of the imagination that lead the unwary into wildernesses of deceiving will o' the wisps and deserts of misguiding mirages.

And yet, as I have said, the consolatory fact that seems always to accompany these temporary delusions is that they seem unexpectedly at last to fetch up in a genuine natural discovery that benefits humanity.

The mysticism of the middle ages flirted with genuine science and, to its own amazement, led away from vague astrological prognostications to a scientific knowledge of the heavens, and from mystical un-

ions of base and pure metals to a genuine chemistry that has revolutionized human thought and industry.

Mythology had long forecast the mystery of the gleaming lightning, but science demanded a Gilbert and Franklin to seize the mythic Mercury from the skies and transmute him into a physical instrumentality for the benefit of the human race.

The transmutation of the species had long been foretold in the vague mythological aspects of Centaurs and mermaids and hamadryads, but not till a Lamarck and a Darwin came to read the truth for us did humanity know the real meaning of these ancient dreams that sprung instinctive from the heart of man.

Human minds had ever felt their mutual kinship, and across the distant spaces yearned to interchange their thoughts without the intervention of physical instruments, and hence the creation of spirits and supernatural agencies; but not till a Bell and an Edison magically made the dream a possibility through physical instruments was the curiosity of the race even partially satisfied.

This line of reasoning leads to another view of natural possibilities relative to the individual lines of men than what has been heretofore contemplated.

Perhaps the instinct of immortal life in the heart of man grows not only out of the fact that living he cannot possibly realize not living; but from the prophetic foregleam of the ultimate triumph of the life that now is and its permanent continuity on this plane. May it be that not only shall man, the individual, continue to live on this plane in the memory of those he leaves behind and in the monuments of his deeds

and character, but that he himself shall verily continue a physical, individual, constant personality, clothed in the fleshy garb of earth?

This is, of course, a bold and at first offensive thought to the sane and rational mind. Yet we must not permit experience and convention to force us from the contemplation of a possibility merely because it has not before appealed to the understanding and reflection of man.

Perhaps it may be in the ages to come the benefactions of scientific discovery will have so advanced and increased that man, the individual, will have discovered the deeply-buried secrets of planetary life, and its potential sustenance through as yet undiscovered foods and resuscitating elements, so that the ancient dream of an eternal life in an unfrequented "bourne" will be realized in the fulfillment of its possibilities on this now mortal plane.

Though nothing stranger than this has as yet ever transpired in the experience of scientific discovery, yet its realization is even now not too vaguely intimated by the present advance of knowledge. For it is certainly not offensive to scientific thought, realizing what such a biological wizard as Carel has accomplished with the primordial and the complex organic forms of inferior life, to forecast similar possibilities in metazoans of far more complex organization, ultimating in the supreme triumph of perpetuating on this planet the individual lives of human beings.

It is a dream, of course, as vague at present as the dream of a future heaven where immortal spirits dwell, yet as all vast knowledge and discovery in the

experience of research has usually begun in distant intimations, it may be that the slight hint of the continuity of individual life which recent biological experimentation has divulged may forecast a similar success with experiments on the secret of the life of so-called human mortals.

Science has now discovered how to compel the indefinite continuity of vital organs when extracted from the organic whole of a living animal; her next step may be the very likely discovery of how to compel the continuity of the organic life as a whole without extracting the organs, through an indefinite period of existence. If it should so turn out that some Carel will discover the way to make a cat or a dog or a guinea pig live on and on, by merely supplying the correct food for its sustenance, so that the historic period of planetary life will be abrogated, and such an animal may be forced to live as long as man may desire; it will require but little more understanding of the mysteries of Nature to revolutionize the possibilities of human existence on this planet.

We know already that longevity could be vastly increased if we but understood the essential chemical reactions to the intake of our food in our present experience. Not understanding this we are subject to all sorts of ailments, to disease and to death after a comparatively brief period of existence. Undoubtedly we kill ourselves long before we should have died, merely because we are ignorant of the food we should eat. When this law shall be understood and submitted to by man he will live for many more decades than his present experience permits.

Carel won success where Maupas and others failed because he invented the proper solution whereon the minute forms of life could continue their existence; and discovered the necessary reactions that the food supply would cause in the extracted organs of the animals on which he experimented. The proper food or chemical solution is the thing that is needed. When man shall learn how to appropriate out of Nature the very things he needs for the continuity of individual life then there seems no good reason for doubting that he can continue such an existence through as long and as indefinite a period as he may demand.

At such time each man's life will be in his own hand; he may live or die as he chooses. Whether such a destiny or possibility is a consummation devoutly to be wished, or whether such long continuity of life would make universal *hari kiri* the common fashion, is, of course, a contemplation that does not lie within the scope of our discussion. But that the success of recent biological experiments has opened vast and impenetrable vistas, inviting man to eager research and far-reaching possibilities, none can question.

It may be that as the dream of angel's wings materialized in the wings of aeroplanes, the dream of the immortality of the soul may issue in the indefinite continuity of planetary life, or the immortality of the flesh.

If ever such an epoch shall lie within the possible conquest of the genius of man, how utterly different will be the common view of death, of life, of human art and toil, than what we now endure! Death will not then be the all-conquerer, but life will be, indeed,

the supreme inspirer. And a new song will then be on all the lips of men, utterly different from that in common vogue at present, so well expressed by Mrs. Hemans.

Leaves have their time to fall,
And flowers to wither at the North-wind's breath,
And stars to set — but all,
Thou hast all seasons for thine own, oh! Death.

We know when moons shall wane,
When summer birds from far shall cross the sea,
When Autumn's hue shall tinge the golden grain —
But who shall teach us when to look for thee?

CHAPTER XXXVIII

The Gateway to Another Sphere

IF, however, the grand climax of earthly existence were that we must be coerced to indefinite and unending planetary life, what an imaginary tragedy of woe would confront and begloom the mind! Who could think comfortably of living always on this earth?

Of course we must contemplate an improved and ever-happier state of existence if earthly life is to continue; for the genius and invention of man will ever develop and be utilized for the benefaction of the race.

Yet even with such a prospect where is the promise of bliss and contentment? Looking back across the vistas of the past how much is man to be encouraged by the progress that has been made? Is he really so to deceive himself as to insist that for the last thousand or two thousand years there has been such genuine development that the race is today so much happier and more contented than it was in preceding ages?

Man has more possessions, more pleasures, more physical acquisitions, more triumphal mental achievements added to his glory, it is true, than in the ages past. But with all these additions to his power and possibilities of pleasure has man yet found such contentment on this earth that he yearns for the continuity of life here with its thousand radiant hopes and promises?

After all, what is there within the narrow compass of each individual life, however triumphal be its career, that spells immortal joy and the gladness of existence? How soon is it all spent in the gloom of receding memory; how soon does the crown of honor melt in the furnace of the passing years?

There on the darkened death bed lies the brain,
That flared three seventy times in several years.
It cannot lift the silly hand again,
Nor speak nor sing; it neither sees nor hears.
And muffled mourners put it in the ground
And then go home, and in the earth it lies,
Too dark for vision and too deep for sound,
The million cells that made a good man wise.
Yet for a few short years an influence stirs,
A sense or wraith or essence of him dead,
Which makes insensate things its ministers
To those beloved, his spirit's daily bread.
Then that, too, fades; in book or deed a spark
Lingers; then that, too, fades; then all is dark.[1]

One can scarcely imagine a condition of existence here that would make life lovable always and an enviable dream. And yet if one is asked if one would die, almost the invariable answer is a fervent prayer for existence, in spite of all the trials and sufferings one must endure. If the instinct and passion of life were not the strongest inspiration of humanity the race long since would have committed universal suicide; for there is not one that is contented, no, not one.

The inspiration of the poets in all ages, from the lamentations of the scripture singers to the last singer that lingers today in the banquet hall of human

[1] John Masefield.

psalmody, has been the pain and suffering of the human heart, the utter vacuity of human life.

In spite of all joys, triumphs, development, progress, there is something about this life of flesh and earth that disappoints, shrivels, cramps and suffocates the free spirit of man.

He feels instinctively that there must be another world, another chance, another act, in the little drama of existence, that shall permit of wider effort, and invite with a more assuring gladness than the short, though sometimes exciting, years he is suffered here to endure.

Therefore looms the dream, the irrepressible dream of an after life. It may be a dream, all a dream, and that, indeed, all life is such stuff as dreams are made on. It may be that as man came from an invisible source, one glimpse backward into which is never permitted him, so he may go forward into oblivion, in whose gloom he shall be forever buried.

Yet he cannot believe it, much as he seeks to convince himself. He is haunted, tantalized, persecuted, with the feeling that he shall live on; that the grave is not the end.

What I have attempted, doubtless feebly, in these pages, has been simply to indicate that this feeling is not all illusion, but mayhap founded in prophetic fact. Nature seems to suggest in the intimations, which I have attempted to point out, that there may be ground of hope for such an existence, on a plane of matter whose laws are so utterly diverse to those of this life, that they are almost unrealizable by the imagination.

Always the picture of the fish in the water and the fish in the air confronts the mind. How could the fish live in the air; how could a fish, even with imagination, conceive the air. Its realm is so utterly beyond all the intimations of its experience, that it could by no means anticipate its possibiilty.

Something like this is the attitude of man toward that realm of the possible invisible world, where there function natural laws whose operations are as diverse to and contradictory of ours as the laws of the air are to those of water.

And yet wholly unlike the state of the fish, save only as a faint suggestion may be given by one of its flying species, is the state of man; for he has discerned already, in the present experience, certain intimations and forecasts of the elements that there prevail, of the powers that there transcend his ordinary powers here.

Resting upon these suggestions, and the anticipatory experience which contact with subtle and illusive elements is gradually divulging to him, man can vaguely glimpse a possible realm where the weight and limitations of the flesh might be sloughed, where the spirit of mental energy might function with less restraint, where space and time, as we now know it, are no more, where death, though occurring, is but introductory to resurrection, and where conscious existence may overcome the barriers that fret the heart and inflame the brain in the struggles for existence on this transitory planet.

If, then, the pursuit of natural science, and the principles it reveals in Nature, which we have at-

tempted in this treatise to traverse, lend any color of assurance to such prophetic possibilities, perhaps the labor is not all lost, and more capable and persistent minds may be able hereafter to carry on the suggestions to a more complete realization.

If the theory advanced in this treatise should seem absurd and untenable, a moment's consideration will probably produce an altered conviction.

It is manifest that if anything of us remains over after death it must be some form of invisible substance, for all that is visible dissolves in dust.

When we are born into this life, we now know that we come with no newly-created frame of matter, but in an invisible frame of vital substance that has descended to us from our ancestry. We now know that there is, physically speaking, an immortal substance passing on from generation to generation, an unbroken river of life-energy that flows on through humanity, and which has flowed on from the first expression of life upon this planet.

But a few years ago any such theory would have been scoffed at and laughed out the courts of science. But practically every biologist of standing now accepts the theory. Yet it looks almost like a contradiction of natural law. For everywhere matter dissolves and its fixed forms of energy are dissipated. That there should be one form of energy, the vital form, one form of substance, living matter, that never dies upon this planet unless it meets with accident, is so extraordinary that at first it was almost universally rejected.

But the form of substance in which the energy of

life acts and manifests itself is itself wholly invisible, beyond the reach of the microscope. That it exists is evidenced by the facts and demanded by the logic of biology. Neverthelss, it cannot be detected as a physical fact, and must be accepted as a logical necessity.

I am not here, of course, referring to microscopical protoplasm, but to that ulterior, plasma-substance, that is the original from which structural and microscopical protoplasm evolves.

Here then is a distinct fact of the greatest importance. All organic life upon this planet begins in an ultra-microscopical form of substance; a substance that is infinitesimal in proportion and invisible in Nature.

The other fact of the greatest importance is that that substance is immortal and has invisibly descended from an ancestry that reaches back to the initiation of planetary life. When an organic form of life actually expires, then, speaking physically, a portion of it remains over and descends through appropriate channels into a subsequent form of life.

Why then is it beyond Nature or contradictory of analogy that when the mortal frame expires and dissolves in the dust, there should remain over an invisible, infinitesimal unit of vitality, whose nature is such that it can no longer manifest itself on this plane of material activity but must reveal itself in forms of activity on a more refined and rarefied plane of matter?

I think we have shown both in this treatise and in the former one (Psychic Phenomena, Science and Im-

mortality) that the vital force and especially the principle of intelligence operates within the present organism through an ultra-material agency, whose laws are wholly contradictory of the laws of ordinary matter, and which in its very nature is indestructible and immortal.

This then may well be the substance which remains over from the expired coarser organism. It may enter on the invisible plane of matter but as an invisible, infinitesimal unit (precisely as the primal unit of organic matter appears on this planet). Out of the original dot of microscopical protoplasm, evolves all the wonder and multitudinousness of planetary life. Why then out of the invisible unit of radio-active (or other form of invisible) energy may not the continuity of the principle of intelligence or consciousness after death continue to operate?

It seems to me clearly that along this line of investigation and study must be found the solution of the problem of the future life. If discovery should further prove to us the actuality of this theory and it should be shown that a form of future life continued, then we see how it might so continue without doing violence to any law or principle of Nature.

But if true the fact would probably make us revise our notion of the nature and conditions of the future life.

For if the future expression of life shall be as I have indicated then it is apparent we do not arise from the grave full formed and fledged for the conscious continuity of another life. What we would do would be to enter there as we enter here.

We came not at once but in the original form of an invisible egg; a small dot of unorganized and undeveloped vital matter. It took many years for us to develop into a human maturity.

May it not then be so on the other plane if we really continue? May we not there enter through the gateway of an invisible or infinitesimal unit of radio-active, electro-magnetic or other matter, which must needs adapt itself to its new environment, and await development and unfoldment according to the conditions there existing?

If this theory be true it would play havoc with some of the imagined conditions which are supposed to prevail in the Great Beyond. According to this theory we would not appear again on the other side as a mature personality as we left this plane, but we would begin with nothing but the implanted memory and hereditary qualities emanating from the life we have lived and left, and would grow up under wholly new and foreign surroundings.

We would slowly pass through another form of life, and whether there would be any manifest memory of the history of this life, or whether it would come back slowly to us by way of intimations and suggestions, much as dreams do at present, is, of course, a detail that would require investigation and discovery.

Nevertheless, we have here a theory which would make plausible and logical the possibility of a future existence, without in the least violating a single principle or law of Nature with which we are at present acquainted.

CHAPTER XXXIX

Thus Science Answers

THUS is the challenge of the War answered by the voice of Science. Barbarous, gruesome and appalling as is the havoc wrought — almost incalculable the loss of life — yet, viewed in the perspective of the Ages, it marks but a bloody hiatus in the vast path of progress trodden by the path of Man. A single life is but a temporary bubble on the ocean of existence, and sooner or later is burst by the passing wind of Fate. Multitudinous lives are but the multiplication of the individual unit, and, too, pursue the same lethal destiny. All sooner or later must die and disappear from this planet. They go out, like the sudden snuffing of a candle, amid the gory gusts of battlefields; that they go in battalions, regiments, divisions, tumbling down the bloody steeps of death — this, indeed, is heart-wracking and appalling. Yet the fact of death is due in every life— whether expiring on the peaceful bed, nursed by Nature's soothing, or consumed with fires of fever, or slaughtered in tempest, holocast or cataclysm, or, alas, swept, en masse, into the hungry maw of devouring War; it is the same — a fate appointed to each of us, escape from which is impossible.

However, History and Science here conspire to relieve us somewhat of the pain and despair the gloomy doom imposes. For History records that though

Death is absolute, though decay and destruction are unavoidable, though civilizations must needs be buried beneath recurring avalanches of havoc and disaster, war and ruination; yet ever above the bloody debris rise once more the resplendent achievements of humanity, prophesying, in spite of ancient woe, the ever hoped for Brighter Day the human heart anticipates. Disaster and Death can never write Finis to the story of human life. It moves forever onward, and defies the Damocles sword of annihilation. Despite the most atrocious and inexcusable war that ever disgraced human history, despite the fact that all the arts and sciences, the knowledges, philosophies and religions of the earth were embroiled and utilized to excuse and carry on the diabolical venture, yet above the gory horror we still discern a golden aureole that bespeaks a nobler age to follow. Today War was made the necessity for the swiftest inventions known to man in any epoch; balloons, dirigibles, Zeppelins, aeroplanes, auto-tanks, submarines of unimagined tonnage and caliber, armored ships of the most gigantic types; a host of newly invented chemical edibles, and varied industries unthought of before the War; all this and much more has come to pass because of the insistant pressure of instant Necessity, created by conditions only such a mighty conflict could engender. But we know the War will end, and when ended we also know that these infinite and almost mythical inventions, now employed only for destructive ends, will be transferred to peaceful utilization, and thereby increase

the comfort, happiness and progress of man beyond the present power of the imagination to conceive.

What a startling and blood-kindling sight, to witness squadrons of air-ships, scores, hundreds, thousands of them, all piercing the skies together, flying defiantly against the sun and in the teeth of tempest or the glare of lightning, to inflict, alas, havoc and destruction on doomed victims beneath! Yet who cannot easily conceive that, once the War is over, all these Gargantuan monsters of Death and woe shall be converted to the uses and happiness of mankind?

We think no more of air-passages as impossible and Utopian; we now know they are actual; and in the near future air-trains will travel over the continent and across the ocean, as now trains on land and ships on water carry the freightage of traffic and human lives. Every invention, hastily conceived or created during these times of misery, will become instrumentalities of human advancement and development. Even the now curseful submarine, made so disgraceful in the eyes of man because of the Teutonic perversion to which it has been put, will emerge from the War, no doubt, one of man's most benignant friends. For is it not possible that the invention will be carried forward to such high degree of improvement that the under-sea passage may become more popular, on account of its freedom from surface storms and tempests, and perhaps a more speedy passage than the upper waves will permit? Then, too, may not some genius soon develop the idea so far that ocean vessels will be contrived in such manner as to combine the efficiency of both surface and submersible

vessels, whereby the voyage may be enjoyed upon the surface in calm weather, and, when the tempest threatens, may sink to calmer depths, where unhindered the passage may be pursued?

One can easily foresee how Science is prepared to advance the interests of mankind a thousand fold because of the impetus given his inventive and creative powers by the bloody spur of War.

Thus from the historical point of view, we are permitted to forecast a future of progress and unimagined prosperity for mankind.

But if the theory advanced in this treatise shall in time be proved to be correct; if we have not misread the possibilities and intimations of Nature, as we have discerned her laws and elements that play so mysterious a rôle in the vast drama of existence, then Science is ready to enhance the encouragement afforded by the retrospect and prophesy of History.

For, as we must all sometime enter the mist-enfolded realms of Valhalla, we are granted, by this or some similar theory, to realize how Nature has provided some form of continuity of the present phase of existence, whether in the persistence of immediate consciousness, or of an initial consciousness to be unfolded in that after sphere, as our present consciousness was here unfolded from initial impersonality. Science seems to intimate that Nature has not wasted the forces which she has aggregated for millenniums to generate the individuality each human being recognizes as himself; but that just as she releases from the heart of the Atom, which she achieved only after countless millions of ages, the secret forces that con-

stitute the phenomenal world which we observe; so she may release from the cumulative forces which she utilized to generate a human soul, or individual, the indestructible energy that will continue to perform on some invisible stage the chief rôle of being in a drama yet unrevealed.

It is impossible to conceive of annihilation; we find it nowhere in Nature; why then, only, in the realm of human consciousness should Nature permit it?

Nature is replete with what we call death; but we know that it is but a phase of transition. The heavens are strewn with spectral corpses of dead stars; constellations have dissolved; worlds have disappeared. But all this fiery cataclysm has been but introductory to resuscitations that again caused the heavens to swarm with resurrected worlds and stars.

The cycle of life and death, death and life, is everywhere. The infinite Rhythm of Nature is recorded in this recurring cycle. Nowhere is Finality written; nowhere is the dust of stars so scattered that reorganization is impossible. The primal Ether is itself instinct with life, and all matter is alive.

This is the Voice of Science, that seems almost strident in our day. It vibrates with hope; it glows with prophecy. THERE IS NO DEATH!

Our error has been in our too anxious thought that all life is as we know it; and what life there may yet be for us, must be as immanent and palpable as the life we now possess.

Of this Science seems not yet assured by Nature. Life, the principle; life, the urge; life, the indestruc-

tible essential; this Life Nature reveals and assures us of.

But the form of life; the instant manifestation; the incarnate individualization; of this Nature does not assure a perpetuity or continuity. Of the life-energy — yes! But of the life-personality — she speaks not yet assuredly of that.

And yet of the Consciousness, as the climax of the individuality, she speaks with intimating promise.

But Consciousness is a form, realized consecutively in gradations of development, dependent on the instrumentality through which it articulates. The present consciousness of the individual is the product of the play of the life-energy on the quality of matter that composes nerve and tissue and cell and brain in the present form of man. With other matter the form of consciousness would be different.

Ah, here enters the voice and cheer of Science; for she begins to intimate, as set forth in this treatise, that there is an element now existing in the human organism, which is not wholly dependable for its existence on the gross particles that constitute this form of flesh; that that element is native to a plane of invisible substance of which in our present bodies we have vague intimations, but whose powers and possibilities we cannot penetrate; that when the gross coil of flesh is shuffled off this rare and sublimate element or substance is released, as the flying electron, when the atom explodes, is released to disport its powers in realms invisible to the eye of man.

The psychic powers, the thoughts and mental energy, which found in this element the substance

through which they could articulate, fly off with the flying electrons; electrons charged with the impress of the individual consciousness; into that invisible realm of matter we make our exit when the gates that lead to life on earth are closed and the gates of a spectral world gape wide.

Such seems to be the intimation of Science, the Answer which forsooth she would give to gory Mars, who gloats on his myriad graves, his blood soaked trenches, his havoc echoing with shrieks of hell, his countless homes pierced with the blood-smeared spears of death.

Nature Answers:

THERE IS NO DEATH. I AM INCARNATE LIFE. WHAT DIES DISSOLVES TO LIVE AGAIN SOMEWHERE, SOMEHOW. DEATH IS AN APPARITION. LIFE IS THE ONLY REALITY!!

FINIS

Appendices

Appendix A

(Referred to on page xxi)

COMMENT

Mr. Carrington I think rather misses the point I undertook to emphasize. It was hardly my intention to assert that the form of matter known as radio-active energy was itself the actual thought or, as he calls it, the noumenon, but I rather undertook to suggest or perhaps to contend, that the energy of the radio-active plane of matter, and what we know as thought or mental energy, were one and the same in essence, their differentiation existing alone in their diverse expression.

It is true, as he says, that all the forces of Nature are *blind,* meaning thereby that they are not outwardly directed by any pre-existing intelligence; but, on the contrary, we find, as I have shown in the body of the work, that scientific investigators are driven to the conclusion that purpose is everywhere manifest in Nature from the lowest and simplest forms of inorganic and organic matter to the highest and most complex.

If that be true, then naturally it must follow that some phase of thought or intelligence is inherent in every form of energy and matter.

My contention is, therefore, that the ultimate essence of all matter—the plane where the electrons exist and function—is the phase of matter most amenable or susceptible to the impulse of the thought energy, and that the radio-active plane of matter is therefore the element in the nervous organism where the thought activity prevails. The radiant matter is itself of course, not thought and consciousness,—but it is the form of energy, or substance if you like, instinct with mental action.

The noumenon is not a thing apart, existing in the nowhere,—untenanted and unclothed,—but it is the mental phase of the radio-active energy when it is evolved in the history of organic life.

In this sense I feel myself to be rather a monist than a dualist—for, it seems to me, the illogical deduction of dualism is that it postulates the existence of spirit, or mind, or noumenon, in a vacuum—finding no habitation for it.

To me it is impossible to conceive of any function or action, any feeling or mentation, which can operate void of a physical agency—but if it exists apart and separate from the agency—(insomuch as matter in some form fills all space) then it must exist in a non-spacial plane—which is inconceivable.

Either the noumenon is inherent in the substance, existing as a function or expression of it, and therefore essentially inseparable, or it exists apart from it, super-imposed upon it.

If it is inherent in the substance then the noumenon becomes a manifestation of it, and is differentiated from it in its functional characteristic only. But if it exists apart from substance then where is it; for is not substance everywhere?

I think the confusion between dualism and monism arises from the fact that we realize that we possess a thought-apparatus (the brain and nervous system), but we seem to do our thinking void of such an apparatus.

We are wholly unconscious of our brain and nervous system in the process of thinking—therefore it seems to us our mentation takes place in a plane above or beyond it. Yet when we reason it out we see, as we do our thinking through the apparatus of the brain and nervous system, that there must be what we might call a thinking element, or thinking substance, in the brain.

Therefore I contend that it is this very refined and

sublimate phase of matter (really immaterial matter) the radio-active plane, where the thinking takes place, and the radiant substance itself functions in the process of thought-activity and consciousness.

Energy apart from matter, or energy in a vacuum, seems unknown in Nature. Therefore consciousness, which is a form of energy, must function in and through some phase of matter. It cannot exist outside of matter (for matter in its primary nature is everywhere).

Hence matter and consciousness must be one and the same in primary essence, but vary vastly in function and manifestation.

This is true, however, only when we conceive of matter as ultimately a phase of energy—and, as consciousness itself is also a form of energy, matter and consciousness are one and the same *in this sense only.*

Of course, as already intimated in the body of the work, and more fully elaborated by me in my other books, when we reduce matter to the plane of energy, we really must think of it as spirit—which in the old theological metaphysics connoted a plane of existence entraneous to matter, but in the new scientific metaphysics connotes the coalescence of energy and matter—or primary substance omnipresent, omnipotent, omni-morphogenetic—that is the universal, absolute Pleroma.

When Nature is thus analyzed it seems to me it compels and corroborates the philosophy of Monism.

THE AUTHOR.

Appendix B

(*Referred to on page* 32)

Fortunately there has just come to hand while I am writing these pages an English publication, "Psychical and Supernormal Phenomena," by Dr. Paul

Joire (William Rider & Sons, London), in which I find further confirmation of thought photographs.

Dr. Joire says:

"In France, a man whose rectitude can be doubted by none, Commandant Darget, states that he has obtained some, which we reproduce in order to convey some idea to those who have no knowledge of them.

The following is the manner in which the author himself says he obtained them:—

There are first of all two photographs representing a bottle.

'They were taken, like that of the cane,' writes Commandant Darget, 'gelatine side downwards, the fingers touching the plate on the glass side, in order to project the fluid and the thought constructing the fluid, putting it in place, so to speak, and making the *Mens agita modem;* to effect this a strong exertion of will-power was needed. M. A., through whose mediumship one of the photographs was obtained, told me that he did not wish to try again because of the headache from which he suffered after these experiments.'

The following is Commandant Darget's own account of the manner in which he obtained the photographs of the bottle.

'On May 27, 1896, M. A. showed me in *L'Illustration* of May 23rd, a finger with some fluidic flames obtained by Dr. Le Bon in the developing bath when touching the gelatine. He invited me that very evening to try the same experiment. I did so, and obtained a large radiation around my five fingers.

'Then M. A. said to me that if one could represent an object, the phenomenon would become remarkable. Here I must enter into some details.

'M. A. had just poured me out a glass of old brandy; I had kept the bottle before my eyes for half an hour. I had expressed my intention of tasting it again, saying jokingly, that this would give me more fluid. Then I put a plate in the bath, which I touched on the

glass side and not on the gelatine side. I thought first of all of a table; my thought glided on to the image of a chair, which also vanished, giving place to the image of the bottle from which I had drunk. It must be observed that I had a similar bottle containing the developer before my eyes and I saw it, by means of the red light, in the dark room.

'The picture which came on the plate when developed is shown herewith. It is certain that the outline of a bottle can be distinguished; it is so clear that it cannot be attributed to a shadow or to a chance fogging.

'M. A., having pointed out that in order to thoroughly prove the reality of this phenomenon, it would be necessary to obtain a second bottle, we agreed to try.

'He did not omit to make me drink of the same old brandy; for my part, I looked for a long time at the bottle.

'Having gone into the dark room, I tried the same process as in the preceding experiment, placing my fingers on the glass side of the plate in the bath. When the plate was fixed and washed we looked for the picture of the bottle and found it.'

Commandant Darget also obtained some very curious photographs, amongst others that of a walking-stick.

This is what he says himself:—

'The photographs of the walking-stick were obtained at Vouziers eleven years ago. It was a stick with a handle which I generally used. I had put it on my desk where I made my photographs that evening, after closing the windows and taking out my red lantern.

'With regard to the eagle, it was produced in this way. Mme. Darget was in my office, lying on my sofa, about ten o'clock in the evening. I said to her: 'I am gonig to put out the lamp and try (as I have

already done sometimes) to take a fluid print over my forehead. I will hand you a plate for you to do it as well.'

'I therefore handed her a plate, which she held with both her hands about an inch in front of her forehead. A short time afterwards, it might be about ten minutes, she said to me: 'I think I have been asleep; I am very tired, I am going to lie down.' And, feeling her way in the darkness, she handed me the plate.

'I then went to develop it, and was surprised to see this astonishing figure of an eagle. I have called it 'a dream-photograph,' although my wife does not remember having dreamed of a bird or anything else while she held the plate.

Appendix C

(*Referred to on page* 38)

"A single cell, out of the millions of diversity differentiated cells, which compose the body, becomes specialized as a sexual cell; it is thrown off from the organism and is capable of reproducing all the peculiarities of the parent body, in the new individual which springs from it by cell-division and the complex process of differentiation. . . . How is it that a single cell of the body can contain within itself all the hereditary tendencies of the whole organism? . . . The germ cells are not divided at all, but they are derived directly from the parent germ-cell. . . . I propose to call this the theory of "The Continuity of the Germ-Plasm," for it is founded upon the idea that heredity is brought about by the transference from one generation to another of a substance with a definite chemical, and above all, molecular, constitution. I have called this substance the "germ-plasm." . . . I have attempted to explain heredity by supposing that in each ontogeny a part of the specific

germ-plasm contained in the parent egg-cell is not used up in the construction of the body of the offspring, but is reserved unchanged for the formation of the germ-cells of the following generation."

From the Introduction to "The Continuity of the Germ-Plasm as the Foundation of a Theory of Heredity," by August Weismann.

Appendix D

(*Referred to on page* 90)

A writer in the *Revue Scientifique* (Paris, June 2-9) tells of interesting experiments by an American and by a Russian scientist tending to prove the "potential immortality" of *Infusoria*. Both made observations covering several years, both used the same media, and both reached the same results. We read:

"The experiments of the American biologist, Woodruff, are particularly striking. He made cultures of *Infusoria* for seven years, from 1907 to 1914, and obtained more than 4,500 generations by successive division, with no intervention of conjugation. The *Infusoria* thus possessed a sort of 'potential immortality' and might have reproduced themselves indefinitely by this asexual method. The interest of the question from the point of view of biologic philosophy is quite evident. Later, a well-known Russian biologist, Metalnikoff, began a long series of experiments, whose results he has just announced.

"The nutritive medium employed by both Metalnikoff and Woodruff was an infusion of hay or a weak solution of beef extract; starting with an isolated organism, he obtained twenty *Infusoria*, which were the starting-points of twenty independent cultures. Each was bred alone on an empty slide. Every day the nutritive medium was renewed, the number of divi-

sions of the *Infusoria* was noted, and, to prevent conjugation, only a single organism was then left in each culture. At present the cultures have been going on for eight years, tho the number of generations is not so high as in Woodruff's experiments, which may be explained by difference in climatic conditions, or perhaps by racial peculiarities of the organisms. Metalnikoff has drawn curves of the speed of reproduction of his *Infusoria*. He notes particularly that in the early years the number of generations obtained decreased yearly, being 413 in 1912, 397 in 1913, 393 in 1914, and 258 in 1915. It might be thought that this was due to progressive decrease in the energy of reproduction; but since the beginning of 1916 the speed has again increased, and at the end of that year it had reached a higher point than at the outset — 490 generations. Metalnikoff's results have thus confirmed Woodruff's. But one may imagine what prodigies of patience will be necessary to carry experiments of such a nature to a successful termination." (*The Literary Digest for July* 28, 1917.)

Again, a writer in the *Revue Scientifique* (Paris, Nov. 30, 1917), quoted in *Literary Digest*, says:

"Authors who have studied the biology of *Infusoria* have proved that they always reproduce by partition, but that after a certain number of successive divisions there necessarily intervenes a conjugation. . . . If for one reason or another the conjugation is prevented, the *Infusoria* . . . begins to present phenomena of age and of degeneration, . . . and finally they die. . . . The recent experiments of Lorande L. Woodruff tend to prove that all *Infusoria* may divide indefinitely without conjugation to rejuvenate the race. . . . Woodruff's investigation thus showed . . . that a one-celled organism may reproduce indefinitely without intervention of conjugation. *Neither old age nor the necessity for fecundation are inherent in living matter.*" (*Italic type by the Author.*)

Appendix E

(*Referred to on page* 271)

Here is a book of genuine merit and worthy of study by those who are seriously interested in occult matters. Many of the books which have been written on this theme have demanded too much faith and trust on the part of the reader to reassure his confidence in the subject matter of the treatises. But in this work Dr. Crawford approaches the subject strictly as a scientist and his conclusions, while they will of course not be accepted by all physicists, are nevertheless most interesting and suggestive. He experimented with an unusually sensitive medium, through a period of extended duration, recording in this book eighty-seven experiments through her that are of so different a type than what one usually meets in psychic research that they cannot be ignored. Preceding him, no other scientist whom I know of, save Sir William Crookes, ever approached the subject from the same angle and undertook similar tests. But Crookes' efforts were of a more limited nature than those of Dr. Crawford's. The latter being a mechanical engineer and lecturer in a University, was able to invent and utilize most sensitive instruments by which to detect the presence of a strange force that apparently emanated from the body of the medium. By scales which he invented he was able to determine the actual amount of the energy that entered into or departed from her body, determined by the varying weight of her body as the force came and went. The book is illustrated with many plates indicating the instruments invented and used in making the tests, thereby enabling the reader to understand the scientific method employed. One of the most interesting features of the work is the deduction of what Dr. Crawford calls "the cantilever theory." This embodies his scientific hypothesis explanatory of the phenomena. He believes that there passes from

the medium during trance states and when under influence of what he calls "the operators," a sort of bar or rod (invisible of course) which tends to curve upward at the end and spread out as if it had fingers and could grasp objects which it contacts. His theory is that by this rod, which the "operators" cause to come out of the medium's body the acts of levitation are performed and the many physical, phenomena which he sets forth.

But strange to say, though he has hit on as plausible and purely semi-mechanical theory, he supplements, and some may think discounts it by declaring his further belief that all these phenomena are performed by the intervention of excarnate spirits, whose identity he believes can be discovered.

This is to me the disappointing feature of this very able work. For until we know all the capabilities and resources of the sub-conscious mental energy in the human organism, we are scarcely justified it occurs to me, to postulate the intervention of superplanetary agencies. It appeals to me as a possibility that the very energy which he insists must pass from the medium's body in the shape of a rod or bar (and his reasons for this phase appear to us as plausible) is of just the type and quality that could be operated by the subliminal forces of the human mind. Speaking of the nature of the energy which functions he himself says, "Now what kind of potential energy is it? Is it chemical, pressure, electrical, heat energy, or some form quite unknown to us? Personally—and now the reader must remember I am again in the region of hypothesis, though of hypothesis derived from a considerable amount of observation—I am inclined to think it is a form of chemical energy associated with the human nervous system. . . . At any rate I think there can be little doubt that this psychic energy is associated with particles of matter."

Having said this it surprised me that the author

should look beyond the plane of invisible "immaterial" matter to find an explanatory source of his phenomena. For in my own work "Psychic Phenomena, Science and Immortality," I have attempted to show that there does exist in the human organism this very energy composed of the minutest particles of matter known in nature, and that these particles escape from the life-cell (whether in the central-nervous, sympathetic or cranial region).

I there said, "A faint glimpse is already given us of a discovery which yet promises to divulge this deep laid secret. The very latest intimations of physical science would seem to indicate that there exists within the interior of the chemical atom, deeper down even than the electrical corpuscle of which it is composed, a secret force, now called the intra-atomic force, that may yet clear up many of the mysteries of chemical action as well as the origin and process of living matter."

And this is the force that too may unlock the mystery of so-called occult phenomena.

The work of Dr. Crawford, though disappointing in this detail, will have to be reckoned with by that great class of antagonistic scientific philosophers who refuse even to undertake a study of the occult. Personally I still cling to the belief that these manifestations are the expressions of energy already resident in the human organism, in its present stage of evolution, and that a few more investigators like Dr. Crawford will dig still deeper and discern the operations and laws of this energy.

The spiritistic hypothesis is naturally the most popular and desirable, as it affords consolation to those who wish to feel assured of an after life. Nevertheless no such assurance should be sought for save what Nature herself evinces and until we have indubitable demonstrations of the spirits or personal "operators," we should patiently pursue our investi-

gations and accept as a working hypothesis that that calls for the least faith and distortion of our reason.

("The Reality of Psychic Phenomena" by W. J. Crawford, D. Sc.—E. P. Dutton & Co., New York. Price $2.00.)

Appendix F

(*Referred to on page* 301)

Says Mr. Soddy, in *Nature* (London, March 3, 1904): "According to recent views stimulated by investigation of the newly discovered radio-active substances, what we call chemical elements, are merely residues left after ages of disintegration similar to what radium and similar bodies are now undergoing. . . . As the process of disintegration continues, certain stages are reached in which the substances produced are of the nature of chemical elements, though differing from the ordinary conception of an element, in that their existence is merely temporary. . . . The atoms of ordinary chemistry represent the forms with longest life, and they exist today because they have survived a process."

Appendix G

Sententious Resume of Theses Consecutively Argued and Elaborated in the Body of this Book

Summary of Scientific Facts That Tentatively Support the Hypothesis of the Possibility of Life After Death

PROPOSITION I

Vitalism, or the principle of life, seems to be a phase of natural energy, co-ordinated and correlated with other natural energies, but possessed of properties wholly different from any of the others.

APPENDICES

PROPOSITION II

Vitalism has a transmorphogenetic property; that is, it can transform inert, lifeless matter into living material. It is the only energy in Nature known to possess this property.

PROPOSITION III

Though Vitalism is correlated with all the other natural energies it accomplishes marvels impossible to them because it creates its own material through which to function.

PROPOSITION IV

Vitalism has the power of constructing, out of the material which it has created or generated from inert matter, an infinity of cells whose complex association constitutes a living organism.

PROPOSITION V

Groups of such cells are set apart for specific work in organic bodies, chief of which are the cells utilized in the nervous system.

PROPOSITION VI

A gradational system of nervous apparatus develops in all organic bodies co-ordinately with the development of psychic powers, which can be traced from the undifferentiated homogeneous body of the amoeba, through vertebrates and mammals to the central nervous system in Man.

PROPOSITION VII

The Central System in Man is the only instrumentality of Self-Consciousness, and constitutes the line of demarkation between the lower animal world and the Kingdom of Man.

PROPOSITION VIII

That is, commensurately with the development of the unfolding powers of the soul, or the psychic capacities, from that of mere reflex response to stimulation, as in the lowest forms of life, to those of perception, memory and reflection in man, there is a gradual development of nervous apparatus from the diffuse vital substance of one-celled animals to the ganglionic systems of inferior animals and finally to the central system and the brain in Man.

PROPOSITION IX

Likewise in the Kingdom of Man there is also a marked gradual development and perfection of the nervous systems as the psychic powers ascend from mere reflex sensations of infancy to the higher powers of maturity.

PROPOSITION X

Self-consciousness in Man is not coincident with birth, but occurs only when the nervous system is sufficiently completed to permit its expression. Usually this occurs after the first or second year of infancy.

PROPOSITION XI

As the capacity of self-consciousness increases there develop in the human brain certain specific centres or organs of thought, by means of which Man accomplishes his intellectual achievements. These centres are entirely wanting in the infant and the lower animals.

PROPOSITION XII

Thus far we have learned that the nervous development of Man, because of the properties of Vitalism, is continuous, progressive and still proceeding, for there is a constant unfoldment of finer and more involved convolutions in the human brain as Man becomes more thoughtful and intelligent.

APPENDICES

PROPOSITION XIII

Apparently the Vitalistic property is such that it determines and develops the character of the apparatus it operates in the various stages of organic growth throughout the animal and human kingdoms.

PROPOSITION XIV

But in the lower Kingdoms the development has ceased and the apparatus take on no new features; whereas in the Kingdom of Man they do. The nervous instrument of the psychic faculties in the lower kingdoms is static and finished; in Man it is dynamic and progressive.

PROPOSITION XV

The substance in which the energy of Vitalism manifests its properties is called Protoplasm. This is the physical basis of life.

PROPOSITION XVI

Protoplasm, while primarily a homogeneous and undifferentiated substance, operates apparently on three distinctive planes: First, there is the visible, vital substance of an organic body; second, there is the plane of the invisible, microscopical, structureless, semi-fluid, substance, sometimes called "bioplasm," which creates the cells and tissues of the body and determines the kind of plant or animal that shall finally evolve from the homogeneous mass; and third, there is the plane of the ultra-microscopical, hypothetical, ulterior substance, which is logically suggested by the nature and conditions of the vital activities.

PROPOSITION XVII

Now, pure protoplasm is accompanied by two distinguishing phenomena; they are the properties of colloidal matter and phosphorescence. Colloidals

have the property of causing chemical reactions in other substances without at all affecting any changes in themselves. Phosphorescence is a spontaneous luminous condition generated without heat.

PROPOSITION XVIII

The colloidal property and phosphorescence are conditions caused by what is known as radio-activity, or the explosion and dissolution of the atom, resulting in a flow of electrons, or negative charges of electricity.

PROPOSITION XIX

The fact, then, that protoplasm is possessed of colloidal and phosphorescent properties indicates that it must be accompanied by radio-active energy, or impacted by streams of flying electrons.

PROPOSITION XX

This fact further postulates the possibility that vital activities originate in an electro-magnetic plane of forces, and that thought, or the force generated in the cell called thought or consciousness is electrical in nature.

PROPOSITION XXI

If radio-activity is a condition of the vital substance, protoplasm, as indicated by the state of colloidal power and of phosphorescence, then the energy of thought, being electrical, would probably also be radio-active, and playing upon the brain cells would generate a plane of electro-magnetism as the field of consciousness.

PROPOSITION XXII

The mental or the psychic powers (that is, the "soul") therefore hypothetically operate in an electro-magnetic plane whose potential phenomena are outside the normal functions of man, and occur spor-

adically or by induction through mediums, or peculiar nervous organisms, causing confusion and misinterpretation.

PROPOSITION XXIII

The possibility of the soul or psychic organism continuing after the dissolution of the gross body will depend on the nature and durability of the element in which the psychic organism functions.

PROPOSITION XXIV

We have seen that the element or substance is apparently the fundamental element of protoplasm, namely radiant matter, which consists of an infinite flow of electrical units discharged from the dissolving atoms of the life units.

PROPOSITION XXV

Now, as thought and consciousness seem to function in this substance and as Nature knows no vacuum, if they continue to function after death it must be through an instrumentality that is capable of continuing its existence after the body from which it evolved has ceased.

PROPOSITION XXVI

But, as all forms of visible and gross matter dissolve in death, the only form of matter that might continue on is the invisible, radio-active substance, or the streams of electrical charge from the disappearing and dissolving atoms.

PROPOSITION XXVII

The escaping electrical units, or electrons, in which consciousness functioned cannot return to other material atoms to form new gross matter on this planet, but go on somewhere forever, or are annihilated.

APPENDICES

PROPOSITION XXVIII

They cannot be annihilated for there is no reduction of something to nothing in Nature. They must therefore go on somewhere. Where do they go?

PROPOSITION XXIX

Either they continue in the association which they maintained while in the living body, or they form new associations in another sphere.

PROPOSITION XXX

The possibility of their holding together as psychic elements of a continued personality would depend on the connecting medium of memory and the intensification of the self-consciousness.

PROPOSITION XXXI

That thoughts or psychic elements seem to be capable of sustaining themselves outside the brain in which they are generated is intimated by the tentative success of thought-photography. If thoughts can be photographed then they must be held in some sort of mould or element which the camera seizes.

PROPOSITION XXXII

The mould in which they persist must be constituted of the electrical units or electrons that make "radiant matter," or radio-active substance.

PROPOSITION XXXIII

Impalpable aura or a flow of electrons around ordinary gross matter, though utterly invisible and ultramiscroscopical, can be photographed. Their existence though temporary is sufficiently long for the taking of a good distinct photograph.

PROPOSITION XXXIV

Considering that gross or inert matter has but a very initial memory and consciousness, scarcely susceptible or detectible, and yet that the electric figures which

invisibly organize around the surface of the gross matter are of sufficient endurance to be photographed, it must follow that thought-forms, susceptible to photography, are capable of much longer duration because of the highly-developed memory and consciousness which characterize their origin in the human brain.

PROPOSITION XXXV

The continuity of individual thought-forms in the electrical element, then, will be commensurate with the degree of memory and self-consciousness that pervades them. And the organization of infinite thought-forms, that have flitted from individual brains and continue on after the brain's decease, would depend on the integrity of the personal consciousness or memory of the individual.

PROPOSITION XXXVI

As in the planetary body of a human being higher and more complex nervous and cranial apparatus are developed by the energy of thought and consciousness, together with the integrating force of memory, it follows that given the continuity of consciousness and memory, in an element that supercedes the body's decease, such consciousness and memory will aggregate and organize the units of the new element in which they subsist to their use and necessity.

PROPOSITION XXXVII

The continuity of future existence will then depend on the durability of the substantial element, in the new plane of existence, and the intensity of the self-consciousness and personal memory of the deceased.

PROPOSITION XXXVIII

First, as to the potential durability of the electrical element in the next plane of existence. This element

is, by hypothesis, radio-active, or constituted of an infinity of free electrical units. These electrical units or electrons are themselves susceptible of temporary continuity within limited period; but they also emit certain emanations which are themselves both susceptible of longer duration than the element from which they emanate, and are capable of transmuting other elements by induction into states of matter of potentially infinite duration.

PROPOSITION XXXIX

Within this element then we find hypothetically a natural medium in which human consciousness and memory may persist, and a medium which by transmutation and induction is susceptible of infinite or perpetual continuity.

PROPOSITION XL

We have then discovered in Nature an invisible element or substance which furnishes all the essential requisities for the material or substantial continuity of thought-energy or conscious, personal existence.

PROPOSITION XLI

We have also found the elements of human personality, namely, the thought-units, and the consciousness that is centred in a personal memory, which is susceptible of ever-increasing development, as demonstrated in the planetary lives of human beings.

PROPOSITION XLII

But, human consciousness and memory are potentially decadent in the planetary organism, therefore senility seems to be prophetic of permanent decay and death. This is true of planetary gross matter; but the element in which thought functions, being free electricity, if released from the limitations and poten-

tial decadence of gross matter, might afford an elastic element susceptible of ever more and more complex organization resulting from the control of increasingly intensified self-consciousness.

PROPOSITION XLIII

Given a free plastic electrical element as the susceptible medium of self-consciousness, capable of duration, though invisible, and of transmutation into other forms of matter (through emanation and induction) which have perpetual durability; given a self-centred and intensifying self-consciousness sustained by the integrating energy of memory activating and functioning through this electrical medium, and you have the essential requisites in Nature of the persistent continuity of personal consciousness, provided such elements or requisites already potentially exist in the human body and become the residue of its decease.

By hypothesis these elements do exist in the human body, subject to the natural laws indicated, and therefore hypothetically afford the natural basis or characteristics necessary for the continuity of conscious personal existence after death. However,

PROPOSITION XLIV

It is not necessary to assume the future existence of a full developed personality or organism, on the advent of the residue of this life into that on another plane. We need but assume a qualified element or substance, in which inhere the integrating tendency of consciousness and memory, the basis of personality, as the substantial foundation of such an existence. The unit in which this residue of the present life may inhere may be infinitesimal. This is certified to by the analogy of organic life on this plane, in which all forms of life begin in a mere microscopical, infinitesi-

mal speck of protoplasm, out of which evolve all the multifarious forms and organisms that constitute the living world of this planet.[1]

[1] Recent scientific investigation seems to be conclusive that spontaneous generation on this planet is a myth.
But it also points to the probable fact in Nature that life was not created in the sense we understand, but that life is an eternal and constant state or condition of the universe which has transmigrated between stars and worlds.
On this point probably Arrhenius has been the most popular expounder as well as original investigator and philosopher. He says: "Life itself is eternal like matter and energy."
Arrhenius introduced another idea which bears directly on our thesis. He conceived that matter in ulterior forms of infinitesimal spheroids was conveyed between stars and worlds by the pressure of light rays, or by radiation. This principle seems to be demonstrated as a fact in Nature. If this is so then he proceeds to show that life itself by this pressure might have been conveyed between worlds. (See Arrhenius's "The Life of the Universe." Harper's Living Lib., pp. 250-251.)
He insists that life was wafted to this planet from some other by the means of radiation or light pressure. By this hypothesis there would exist what might be called life-germs or primordial life units which are wafted to this planet to be revealed in manifold biological transformations.
Now couple this hypothesis with that expressed in this treatise, namely, that thoughts are forms of radiant energy or matter, that reside in and emanate, or are emitted, from the human brain, then by the force of light pressure these thought-forms might not only travel between mutual brains, but be wafted through the invisible ether to other spheres to begin again another form of evolutional expression. This psychic unit would not only be the complement of the life in eternal persistence (containing the concentrated consciousness of the expired individual) but would possess the potency (by reason of instinctive memory) of reconstructing a new personal life founded on the evolution and inertia of the form of life which has ceased to appear on earth.
The error into which we have probably permitted ourselves to be led by past traditions, on contemplating the nature of future existence, is, that if life continues on, it must be the continuation of the full-developed and perfected form of life manifested on this plane. On this theory the "I" or Ego must depart this planet in full and conscious realization of its earthly existence, and from this high altitude in personal evolution, is to pass directly to still higher phases of development.
Now by the analogy of what science discovers in Nature this conception must be modified. All that science, apparently, can discover or detect is the possibility of some germ of life continuing after the dissolution of the full-developed form here; but this germ must pass historically through similar phases of evolution, on a different plane of matter elsewhere, which the earth-form of the life-germ experienced in its history on this planet. Arrhenius, perhaps unconsciously, affords us this hint when he says: "One important conclusion we may perhaps already anticipate is that all living beings of the Universe must be related to one another, and that when life begins on any body of the cosmos, it must commence with the lowest known forms to rise in slow evolution to more highly organized types." (Page 252).

If "life itself is eternal like matter and energy," as he says, and if by my hypothesis thought too is a form of radiant energy; and if by Arrhenius's theory life can be transmitted from one planet to another by light pressure; then why cannot we postulate that life-germs, imbued with thought — or consciousness-energy, left over from the expired physical body of a human being, may also be thus carried by light pressure through the ether to other worlds, there to evolve into a new form of biological and psychic development?

PROPOSITION XLV

As the germ of this planetary life (an infinitesimal speck) is potentially deathless on this plane, and has descended in myriad forms of life directed by heredity, environment and survival, may not also a germ of life, consisting of more sublimate, invisible and self-perpetuating substance, emanating from that group of cells which constitute the organic centres of thought and consciousness, become the logical residue of the life-energy of this plane, susceptible to continuity of existence on a plane where such substance may be capable of more complex and highly developed forms of expression?

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